HITACHI

No. 0106

CP2025T
C2125T/S
CL2125T/S
CP2125T/S
C2142N/S
CL2142AN/S
CP2142AN/S
C2842N/S
CL2842AN/S
CP2842AN/S

SERVICE MANUAL
MANUEL D'ENTRETIEN
WARTUNGSHANDBUCH

CAUTION:
Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this service manual.

ATTENTION:
Avant d'effectuer l'entretien du châassis, le technicien doit lire les «Précautions de sécurité» et les «Notices de sécurité du produit» présentés dans le présent manuel.

VORSICHT:
Vor Öffnen des Gehäuses hat der Service-Ingenieur die „Sicherheitshinweise" und „Hinweise zur Produktsicherheit" in diesem Wartungshandbuch zu lesen.

Data contained within this Service manual is subject to alteration for improvement.

Les données fournies dans le présent manuel d'entretien peuvent faire l'objet de modifications en vue de perfectionner le produit.

Die in diesem Wartungshandbuch enthaltenen Spezifikationen können sich zwecks Verbesserungen ändern.

August 2000

ENGLISH

SAFETY PRECAUTIONS

WARNING: The following precautions must be observed.

ALL PRODUCTS

Before any service is performed on the chassis an isolation transformer should be inserted between the power line and the product.

1. When replacing the chassis in the cabinet, ensure all the protective devices are put back in place.
2. When service is required, observe the original lead dressing. Extra precaution should be taken to ensure correct lead dressing in any high voltage circuitry area.
3. Many electrical and mechanical parts in HITACHI products have special safety related characteristics. These characteristics are often not evident from visual inspection, nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by marking with a ⚠ on the schematics and the replacement parts list.
   The use of a substitute replacement component that does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list, may create electrical shock, fire, X-radiation, or other hazards.
4. Always replace original spacers and maintain lead lengths. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Insulation resistance should not be less than 2M ohms at 500V DC between the main poles and any accessible metal parts.
6. No flashover or breakdown should occur during the dielectric strength test, applying 3kV AC or 4.25kV DC for two seconds between the main poles and accessible metal parts.
7. Before returning a serviced product to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock. The service technician must make sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing.

CE MARK

1. HITACHI products may contain the CE mark on the rating plate indicating that the product contains parts that have been specifically approved to provide electromagnetic compatibility to designated levels.
2. When replacing any part in this product, please use only the correct part itemised in the parts list to ensure this standard is maintained, and take care to replace lead dressing to its original state, as this can have a bearing on the electromagnetic radiation/immunity.

PICTURE TUBE

1. The line output stage can develop voltages in excess of 25kV; if the E.H.T. cap is required to be removed, discharge the anode to chassis via a high value resistor, prior to its removal from the picture tube.
2. High voltage should always be kept at the rated value of the chassis and no higher. Operating at higher voltages may cause a failure of the picture tube or high voltage supply, and also, under certain circumstances could produce X-radiation levels moderately in excess of design levels. The high voltage must not, under any circumstances, exceed 29kV on the chassis (except for projection Televisions).
3. The primary source of X-radiation in the product is the picture tube. The picture tube utilised for the above mentioned function in this chassis is specially constructed to limit X-radiation. For continued X-radiation protection, replace tube with the same type as the original HITACHI approved type
4. Keep the picture tube away from the body while handling. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled

LASERS

If the product contains a laser avoid direct exposure to the beam when the cover is open or when interlocks are defeated or have failed.

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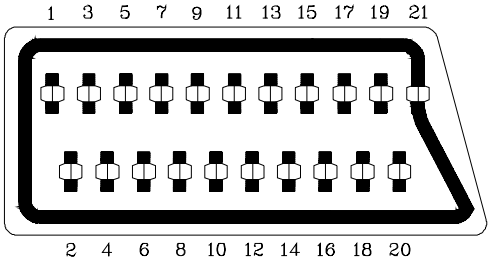
DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCHED OFF
The mains supply side of the switch mode power supply transformer is live.
Use an isolating transformer.
The receivers fulfill completely the safety requirements.

Safety precautions:
Servicing of this TV should only be carried out by a qualified person.
- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.
- Power resistor and fusable resistors must be mounted in an identical manner to the original component.
- When servicing this TV, check that the EHT does not exceed 26kV.

TV Set switched off:
Make short-circuit between HV-CRT clip and CRT ground layer.
Short C804 (150mF) before changing IC802 or other components in primary side of SMPS.

Measurements:
Voltage readings and oscilloscope traces are measured under following conditions.
Antenna signal 60dB from colourbar generator. (100% white, 75% colour saturation)
Brightness, contrast, colour set for a normal picture.
Mains supply, 220VAC, 50Hz.

PERI-TV SOCKET



	SCART 1 (SC050)		SCART 2 (SC051)	
1	Audio right output	0.5Vrms / 1K	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K	Audio left output	0.5Vrms / 1K
4	Ground AF		Ground AF	
5	Ground Blue		Ground Blue	
6	Audio left input	0.5Vrms / 10K	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K	AV switching input	0-12VDC /10K
9	Ground Green		Ground Green	
10	-		-	
11	Green input	0.7Vpp / 75ohm	-	
12	-		-	
13	Ground Red		Ground Red	
14	Ground Blanking		Ground Blanking	
15	Red input	0.7Vpp / 75ohm	-	
16	Blanking input	0-0.4VDC, 1-3VDC / 75ohm	-	
17	Ground CVS output		Ground CVS output	
18	Ground CVS input		Ground CVS input	
19	CVS output	1Vpp / 75ohm	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm	CVS input	1Vpp / 75ohm
21	Ground		Ground	

1. INTRODUCTION
This is a 90ø and 110ø chassis capable of driving 20-21",24",25",28-29",32",33" tubes at appropriate currents.
The chassis is capable of working in both PAL and SECAM. The sound system is capable of giving 6watts RMS output into a load of 8ohms.
One 8 page simple TELETEXT, TOPTEXT and FASTEXT is provided.
The chassis is equipped with 21-pin scart connectors which can accept via scart the SVHS format from VCRs so equipped.

2. SMALL SIGNAL PART WITH TDA884X
The TDA8840/8842/8844 combine all small signal functions required for a colour TV receiver, except tuning.
2.1. Vision IF amplifier
The IF-amplifier contains 3 AC-coupled control stages with a total gain control range which is higher than 66dB.
The sensitivity of the circuit is comparable with that of modern IF-IC' s. The video signal is demodulated by means of a PLL carrier regenerator. This circuit contains a frequency detector and a phase detector. The AFC output is obtained by using the VCO control voltage of the PLL and can be read via the I²C-bus. For fast search tuning systems the window of the AFC can be increased with a factor 3. The setting is realised with the AFW bit.
Depending on the type the AGC-detector operates on top-sync level (single standard versions) or on top sync and top white-level (multi standard versions). The demodulation polarity is switched via the I²C-bus. The AGC detector time-constant capacitor is connected externally. This mainly because of the flexibility of the application. The time-constant of the AGC system during positive

modulation is rather long to avoid visible variations of the signal amplitude. To improve the speed of the AGC system a circuit has been included which detects whether the AGC detector is activated every frame period. When during 3 frame periods no action is detected the speed of the system is increased. For signals without peak white information the system switches automatically to a gated black level AGC. Because a black level clamp pulse is required for this way of operation the circuit will only switch to black level AGC in the internal mode.
The circuits contain a video identification circuit which is independent of the synchronisation circuit. Therefore search tuning is possible when the display section of the receiver is used as a monitor. The ident output is supplied to the tuning system via the I²C-bus. The video ident circuit can be made less sensitive by means of the STM bit. This mode can be used during search tuning to avoid that the tuning system will stop at very weak input signals.

2.2. Video Switches

The circuits have two CVBS inputs (internal and external CVBS) and Y/C input. When the Y/C input is not required the Y input can be used as third CVBS input. The selection of the various sources is made via the I²C-bus. The circuit has one CVBS output.

2.3. Sound Circuit

The sound band pass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. This PLL circuit tunes itself automatically to the incoming carrier signal so that no adjustment is required.
The volume is controlled via the I²C-bus. The deemphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin. The FM demodulator can be muted via the I²C-bus. This function can be used to switch-off the sound during a channel change so that high output peaks are prevented. The TDA8840/8842 contain an automatic volume levelling (AVL) circuit which automatically stabilises the audio output signal to a certain level which can be set by the viewer by means of the volume control. This function prevents big audio output fluctuations due to variations of the modulation depth of the transmitter. The AVL function can be activated via the I²C-bus.

2.4. Synchronisation circuit

The sync seperator is preceded by a controlled amplifier which adjusts the sync pulse amplitude to a fixed level. These pulses are fed to the slicing stage which is operating at 50% of the amplitude. The separated sync pulses are fed to the first phase detector and to the coincidence detector. This coincidence detector is used to detect whether the line oscillator is synchronised and can also be used for transmitter identification. The first PLL has a very high statical steepness so that the phase of the picture is independent of the line frequency.
The horizontal output signal is generated by means of an oscillator which is running at twice the line frequency. Its frequency is divided by 2 to lock the first control loop to the incoming signal. The time-constant of the loop can be forced by the I²C-bus (fast or slow).
If required the IC can select the time-constant depending on the noise content of the incoming video signal.
To protect the horizontal output transistor, the horizontal drive is immediately switched off when a power-on-reset is detected. The drive signal is switched-on again when the normal switch-on procedure is followed.
Via the I²C-bus, adjustments can be made of the horizontal and vertical geometry. The vertical sawtooth generator drives the vertical output drive circuit which has a differrential output current. For the EW drive a single ended current output is available.
When the horizontal scan is reduced to display 4 : 3 pictures on a 16 : 9 picture tube an accurate video blanking can be switched on to obtain well defined edges on the screen.
Overvoltage conditions can be detected via the EHT tracking pin.When an overvoltage condition is detected the horizontal output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I²C-bus output byte. The choice is made via the input bit PRD.

2.5. Chroma and Luminance processing

The circuits contain a chroma bandpass and trap circuit. The filters are realised by means of gyrator circuits and they are automatically calibrated by comparing the tuning frequency with the X-tal frequency of the decoder.
The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.
The centre frequency of the chroma bandpass filter is switchable via the I²C-bus so that the performance can be optimised for “front-end” signals and external CVBS signals.
During SECAM reception the centre frequency of the chroma trap is reduced to get a better suppression of the SECAM carrier frequencies.

2.6. Colour Decoder

The decoder contains an alignment-free X-tal oscillator, a killer circuit and two colour difference demodulators. The 90° phase shift for the reference signal is made internally.
The IC contains an automatic colour limiting (ACL) circuit which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received. The ACL circuit is designed such that it only reduces the chroma signal and not the burst signal. This has the advantage that the colour sensitivity is not affected by this function.
The base-band delay line is integrated in the PAL/SECAM IC’ s.
The demodulated colour difference signals are internally supplied to the delay line. The matrixed signals are externally available.
The colour difference matrix switches automatically between
PAL/SECAM and NTSC, however, it is also possible to fix the matrix in the PAL standard.
Which colour standard the IC can decode depends on the external X-tals. The X-tal to be connected to pin 34 must have a frequency of 3.5 MHz (NTSC-M, PAL-M or PAL-N) and pin 35 can handle X-tals with a frequency of 4.4 and 3.5 MHz. To prevent calibration problems of the horizontal oscillator the external switching between the 2 X-tals should be carried out when the oscillator is forced to pin 35. For a reliable calibration of the horizontal oscillator it is very important that the X-tal indication bits (XA and XB) are not corrupted. For this reason the X-tal bits can be read in the output bytes so that the software can check the I²C-bus transmission.

2.7. RGB output circuit and black-current stabilisation

The colour-difference signals are matrixed with the luminance signal to obtain the RGB-signals. The TDA 884X device has one linear RGB input. This RGB signal can be controlled on contrast and brightness.
The output signal has an amplitude of about 2 volts black-to-white at nominal input signals and nominal settings of the controls.
To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs.
This insertion mode is controlled via the insertion input (pin 26 in the S-DIP 56- and pin 38 in the QFP-64 level). This blanking action at the RGB outputs has some delay which must be compansated externally.
To obtain an accurate biasing of the picture tube a “Continuous Cathode Calibration” circuit has been developed.
This function is realised by means of a 2-point black level stabilisation circuit.

When the TV receiver is switched-on, the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels.Via the AST bit a choice can be made between automatic start-up or a start-up via the m-processor.

3. TUNER

Either a PLL or a VST tuner is used as a tuner.

UV1316 (VHF/UHF) is used as a PLL tuner. For only PALM/N, NTSC M applications UV1336 is used as the PLL tuner. UV1315 (VHF/UHF) is used as a VST Tuner.

Channel coverage of UV1316:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS RANGE (MHz)	FREQUENCY	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25(1)	S01to S08	69.25 to 154.25
Mid Band	E5 to E12	175.25 to 224.25	S09 to S38	161.25 to 439.25
High Band	E21to E69	471.25 to 855.25(2)	S39 to S41	447.25 to 463.25

(1). Enough margin is available to tune down to 45.25MHz.
(2). Enough margin is available to tune up to 863.25MHz.

Noise	Typical	Max.
Low band	: 5dB	9dB
Mid band	: 5dB	9dB
High band	: 6dB	9dB

Gain	Min.	Typical	Max.
All channels	: 38dB	44dB	52dB
Gain Taper (of-air channels)	: -	-	8dB

Channel Coverage UV1336:

BAND	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	2 to D	55.25 to 139.25
Mid Band	E to PP	145.25 to 391.25
High Band	QQ to 69	397.25 to 801.25

Noise is typically 6dB for all channels. Gain is minimum 38dB and maximum 50dB for all channels.

Channel Coverage of UV1315:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 (1)	S01 to S10	69.25 to 168.25
Mid Band	E5 to E12	175.25 to 224.25	S11 to S39	231.25 to 447.25
High Band	E21 to E69	471.25 to 855.25 (2)	S40 to S41	455.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typ.	Max.
Low band	: 6dB	9dB
Mid band	: 6dB	10dB
High band	: 6dB	11dB

Gain	Min.	Typ.	Max.
All Channels	38dB	44dB	50dB
Gain Taper	-	-	8dB
(off-air channels)			

4.VIDEO SWITCH TEA6415C

In case of three or more external sources are used, the video switch IC TEA6415C is used. The main function of this device is to switch 8 video input sources on the 6 outputs.

Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals).

Each nominal gain between any input and output is 6.5dB.For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS.

Driving 75ohm load needs an external resistor.

It is possible to have the same input connected to several outputs.

5. AM DEMODULATOR TDA9830

The TDA9830 is designed for AM-sound demodulation used in L and L' standard.

Sound IF Input:

The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20dB gain. At the output of each stage is a multiplier for gain controlling. The overall control range is approximately -6 to +60dB and the frequency response (-3dB) of the IF amplifier is approximately 6 to 70MHz. The steepness of gain control is approximately 10mV/dB.

IF AGC:

The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector.The AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage.The maximum charge/discharge current is approximately 5mA.

AM-demodulator

The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplier circuit. However the limiter output signal (which is not any more AM modulated) is also fed to the multiplier, which provides AM demodulation (in phase demodulation). After lowpass filtering (fg @ 400KHz) for carrier rejection and buffering, the demodulator output signal is present at pin 6.

Audio Switch

This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0dB) and frequency response (fg @ 700KHz). Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state. The selected signal is present at pin 8. The decoupling capacitors at the input pins are needed, because the internally generated bias voltage for the input stages must not be influenced by the application in order to avoid DC-plop in case of switching.

Reference Circuit:

This circuit is a band gap stabiliser in combination with a voltage regulation amplifier, which provides an internal reference voltage of about 3.6V nearly independent from supply voltage and temperature. This reference voltage is filtered by the capacitor at pin 4 in order to reduce noise. It is used as a reference to generate all important voltages and currents of the circuit. For application in 12V power supply concepts, there is an internal voltage divider in combination with a Darlington transistor in order to reduce the supply voltage for all IC function blocks to approximately 6V.

6. DIGITAL TV SOUND PROCESSOR TDA9875

The TDA9875 is a single-chip Digital TV Sound Processor.
Supported standards are M, B/G, D/K, I and L.

Description of the demodulator and decoder section:

SIF Input:

Two input pins are provided, SIF1 e.g. for terrestrial TV and SIF2 e.g. for a satellite tuner. The selected signal is passed through an AGC circuit and then digitized by an 8-bit ADC operating at 24.576MHz.

AGC:

The gain of the AGC amplifier is controlled from the ADC output by means of a digital control loop employing hysteresis. The AGC has a fast attack behaviour to prevent ADC overloads and slow decay behaviour AGC oscillations. For AM demodulation AGC must be switched off.

Mixer

The digitized input signal is fed to the mixers, which mix one or both input sound carriers down to zero IF. A 24-bit control word for each carrier sets the required frequency.

FM and AM Demodulation

An FM or AM input signal is fed via a band-limiting filter to a demodulator that can be used for either FM or AM demodulation. Apart from the standard (fixed) de-emphasis characteristic, an adaptive de-emphasis is available for encoded satellite programs. A stereo decoder recovers the left and right signal channels from the demodulated sound carriers.

FM Identification:

The identification of the FM sound mode is performed by AM synchronous demodulation of the pilot signal and narrow-band detection of the identification frequencies. The result is available via the I²C-bus interface.

NICAM Demodulation:

The NICAM signal is transmitted in a DQPSK code at a bit rate of 728 kbit/s. The NICAM demodulator performs DQPSK demodulation and feeds the resulting bitstream and clock signal onto the NICAM decoder and, for evaluation purposes, to PCLK (pin 1) and NICAM (pin 2).

NICAM Decoder:

The device performs all decoding functions in accordance with the "EBU NICAM 728 specification". After locking to the frame alignment word, the data is descrambled by applying the defined pseudo-random binary sequence; the device will then synchronise to the periodic frame flag bit C0.
The status of the NICAM decoder can be read out from the NICAM status register by the user. The OSB bit indicates that the decoder has locked to the NICAM data. The VDSP bit indicates that the decoder has locked to the NICAM data and that the data is valid sound data.

7. SOUND OUTPUT STAGE TDA2614/TDA2615/TDA2616Q

TDA2614 is used as the AF output amplifier for mono applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2615 is used as the AF output amplifier for stereo applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2616Q is used as the AF output amplifier for stereo and dolby prologic applications. It is supplied by ±16VDC coming from

a separate winding in the SMPS transformer . An output power of 2*12W (THD=0.5%) can be delivered into an 8ohm load.

8. VERTICAL OUTPUT STAGE WITH TDA8351/8356

The TDA8351/8356 vertical deflection circuit can be used in 90° and 110° deflection systems with field frequencies from 50 up to 120Hz. With its bridge configuration the deflection output can be DC coupled with few external components.
Only a single supply voltage for the scan and a second supply for the flyback are needed. The TDA8356 is intended for 90° systems and the TDA8351 is intended for 110° systems.
The drive voltage is amplified by an amplifier and fed to two amplifiers, one is inverting and the other is a non inverting amplifier. The outputs (pins 7 and 4) are connected to the series connection of the vertical deflection coil and feedback resistor Rsense (R702//R703). The voltage across Rsense is fed via pin 9 to correction amplifier, to obtain a deflection current which is proportional to the drive voltage. The supply voltage for the TDA8351/8356 is 15VDC at pin 3. The supply voltage generator has a separate supply voltage of 45VDC at pin 6.

9. VIDEO OUTPUT AMPLIFIER TDA6107Q

The TDA6107Q consists of three monolithic video output amplifiers. The amplifier can be seen as an operational amplifier with negative feedback.
The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.
The internal flash diodes protect the amplifiers against flash over in the picture tube.
The only protections required at the cathode outputs are a flash resistor and a sparkgap.
The TDA6107Q has an internal thermal protection circuit which gives a decrease of the slew rate at high temperatures.
Furthermore, the device needs only one power supply voltage (Vdd).
In contrast to previous types of DMOS video amplifiers, all the external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and saves 9 resistors.
Furthermore, the reference voltage is integrated, it saves a resistor divider and a decoupling capacitor. So, the replacement value of the TDA6107Q is very high.
The TDA6107Q is provided with a black current data pin. Since TDA884X is used as drive device, no adjustments are required for gain and black setting, as the TDA884X has I²C white point adjustment and black current set-up.

10. SINGLE/MULTISTANDARD VIF/SIF-PLL and FM-PLL/AM DEMODULATOR TDA9818

The TDA9818 is an IC for multistandard vision IF signal processing, sound AM and FM demodulation.
It is a gain controlled wide band VIF-amplifier (AC-coupled). It is applicable for IF frequencies of 38.9MHz, 45.75MHz and 58.75MHz.
True synchronous demodulation is provided with active carrier regeneration. It has a VCO frequency which can be switchable between L and L accent (alignment external) picture carrier frequency.
The TDA9818 has a SIF input for single reference QSS mode (PLL controlled). SIF AGC detector is to provide gain controlled SIF amplifier. The AM demodulator is without extra reference circuit. The supply voltage is +5VDC at pin 21.

11. COMBFILTER SAA4961

The SAA 4961 is a one-chip, PAL/NTSC combfilter IC with internal delay lines, filters, clock control, synchronisation and signal switches. The combfilter function is realised in a switched capacitor technique, so it has time discrete but amplitude continuous processing.
The Y/CVBS input is first clamped and then fed to the delay-line and combfilter section via a low pass pre-filter.
This filter can be bypassed via the external LPF-on pin. This pin is internally pulled up, to put the filter default on. The Y/CVBs input is also fed to the sync seperator, where horizontal and vertical reference pulses are made.
Bypass mode can be forced via BYP (pin 3).FSC (pin 1) is the subcarrier input which is connected to the colour decoder.
Input FSCSW pin indicates if fsc or 2*fsc is used.
The Sys1,2 pins (20, 23) indicate which system standard is processed. Sys2 is internally pulled up, Sys1 is internally pulled down. Therefore when the Sys1,2 inputs are left open, automatically PAL 4.43MHz is forced.
SAA4961output pin 15 “CVBS” can be used for parallel-synced teletext decoders, to guarantee that the teletext display always has a correct timing relation with the main picture. Comb filter is disabled by setting SAA4961 pin 3 “BYP” high.

12. POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44604 which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer produces 150/115V for FBT input, ±14V for audio output IC, S+5V for microcontroller, +15V for vertical output (field scan) and +33V for tuner and some other ICs and transistors.

13. MICROCONTROLLER SDA525X

The device is TV TEXT tuning and control system based on the SDA 525X TV TEXT microcontroller. It is designed for a low cost mono TV-SET with analogue picture and sound control. Neverthless the system offers an on screen display (OSD) and IR remote control of all functions.

SDA525X has the following features:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD.
- Single LED for IR active, standby and on mode indication.
- 1 Control line to select external source.
- 3 Control lines for TV standard selection.
- Frequency synthesis tuning (62.5KHz steps)
- 192 step fine tuning
- Channels corresponding to standards B/G, OIRT, L and I (I+)
- Mono sound control by analogue voltage
- System configuration with service mode

14. SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organised as 4 blocks of 256*8 bits.
The memory is compatible with the I²C standard, two wire serial interface which uses a bi-directional data bus and serial clock.
The memory carries a built-in 4 bit, unique device identification code (1010) corresponding to the I²C bus definition.
This is used together with 1 chip enable input (E) so that up to 2*8K devices may be attached to the I²C bus and selected individually.

15. CLASS AB STEREO HEADPHONE DRIVER TDA1308

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package.
The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

16. SAW FILTERS

Saw filter type	:	Model:
G1965M	:	PAL-SECAM B/G MONO
G3962M	:	PAL-SECAM B/G GER&NIC STEREO, PAL I' NIC STEREO, INT-1
G1984	:	PAL-SECAM B/G GER&NIC STEREO INT-2
J1951M	:	PAL-I MONO
J3950M	:	PAL-I NIC STEREO
J1956M	:	PAL-I' MONO
K2955M	:	PAL-SECAM B/G-D/K MONO, PAL-SECAM B/G-D/K-I', MONO, PAL-SECAM B/G-D/K-L MONO
K2958M	:	PAL-SECAM B/G-D/K (38) MONO
K2962M	:	PAL-SECAM B/G-L/L' MONO
G3957M	:	PAL-SECAM B/G-L/L' GER&NIC BG/L STEREO
K6256K	:	PAL-SECAM B/G-D/K-I-L/L' MONO, PAL-SECAM B/G-D/K-I, L/L' GER&NIC BG/L STEREO, PAL-SECAM B/G-D/K-I-L/L' I, NICAM STEREO, PAL-SECAM B/G-D/K-I-L/L' GER&NIC I'-B/G-L, STEREO
K6259K	:	PAL-SECAM B/G-D/K-I-M/N (EURO) MONO
M1963M	:	PAL M/N MONO, NTSC M MONO, PAL M/N-NTSC M MONO

17. BTSC STEREO/SAP/DBX-DECODER and AUDIO PROCESSOR TDA9855

The TDA9855 is a BTSC stereo/SAP/dbx decoder and audio processor. It performs all functions to transform the composite baseband signal into the appropriate audio output signals to line out and to the loudspeaker output stages.

IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

- TDA8840/8842/8844
- TUNER (UV1315, UV1316, UV1336)
- TEA6415C
- TDA9830
- TDA2614/2615/2616Q
- TDA8351/8356
- TDA6107Q
- SAA4961
- MC44604
- SDA525X
- TDA9875
- TDA9818
- ST24C08
- TDA1308
- G1965M
- TDA9855

TDA8840/8842/8844:

The TDA884X is I²C-bus controlled single chip TV processor which is intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers. These IC's are nearly pin compatible with the TDA837X TV processors but have a higher degree of integration because the delay line (TDA4665 function) and the SECAM decoder have been integrated. In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone control.

Features:

- Vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5MHz to 6.5MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable center frequency
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue black" option when no video signal is available
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- I²C-bus control of various functions
- Low dissipation (850mW)

Functional Differences between the 8840/8842/8844:

IC VERSION (TDA)	8840	8842	8844
Multi-standard IF		X	X
Automatic Volume Limiting	X	X	
PAL Decoder	X	X	X
SECAM Decoder		X	X
NTSC Decoder		X	X
Dynamic Skin Control			X
Colour Matrix PAL/NTSC (Japan)		X	X
Colour Matrix NTSC Japan/USA			
YUV interface			X
Base-band delay line	X	X	X
Adjustable luminance delay time			X
Horizontal geometry			X
Horizontal and vertical zoom			X
Vertical scroll			X

PINNING	PIN VALUE
1. Sound IF input	: 1mVrms
2. External audio input	: 500mVrms
3. IF demodulator tuned circuit 1	
4. IF demodulator tuned circuit 2	
5. IF-PLL loop filter	: Min:32-Max:60MHz
6. IF video output	: 4.7V (Negative Modulation), 2V (Positive Modulation)
7. Serial clock input	: Low level max:1.5 V, High level min 3.5V
8. Serial data input/output	: Low level max:1.5 V, High level min 3.5V
9. Bandgap decoupling	
10. Chrominance input (S-VHS)	: 1Vpp, Max:1.4Vpp
11. External CVBS/Y input	: 1Vpp, Max:1.4Vpp
12. Main supply voltage 1	: 8V, Min:7.2V, Max:8.8V
13. Internal CVBS input	: 1Vpp, Max:1.4Vpp
14. Ground 1	
15. Audio output	: 700mVrms, Min:500mVrms, Max:900mVrms
16. SECAM PLL decoupling	
17. External CVBS input	: Vpp, Max:1.4Vpp
18. Black-current input	: Amplitude of “low” reference current : 8mA Amplitude of “high” reference current : 20mA
19. Blue output	: 2Vpp
20. Green output	: 2Vpp
21. Red output	: 2Vpp
22. Beam current limiter input/V-guard input	
23. Red input for insertion	: 0.7Vpp, Max:0.8Vpp
24. Green input for insertion	: 0.7Vpp, Max:0.8Vpp
25. Blue input for insertion	: 0.7Vpp, Max:0.8Vpp
26. RGB insertion input	: Max:0.3V
27. Luminance input	: 1.4Vpp
28. Luminance output	: 1.4Vpp
29. (B-Y) signal output	: 1.05Vpp
30. (R-Y) signal output	: 1.05Vpp
31. (B-Y) signal input	: 1.05Vpp
32. (R-Y) signal input	: 1.05Vpp
33. Subcarrier reference output	: 3.58/4.43MHz
34. 3.58MHz crystal connection	
35. 4.43/3.58MHz crystal connection	
36. Loop filter phase detector	
37. 2nd supply voltage 1	: 8V, Min:7.2V, Max:8.8V
38. CVBS output	: 1Vpp, Max:1.4Vpp
39. Decoupling digital supply	: 1.8V
40. Horizontal output	: Max: 0.3V
41. Flyback input/sandcastle output	: Min:100ma, Max:300mA
42. Phase-2 filter	: 150ms/ms
43. Phase-1 filter	: ±0.9KHz, Max: ±1.2KHz
44. Ground 2	
45. East-west drive output	
46. Vertical drive A output	: 0.95mA
47. Vertical drive B output	: 0.95mA
48. IF input 1	
49. IF input 2	
50. EHT/overvoltage protection input	: Min:1.2V, Max : 2.8V
51. Vertical sawtooth capacitor	: 3Vpp
52. Reference current input	: 3Vpp
53. AGC decoupling capacitor	
54. Tuner AGC output	: Max:9V (Maximum tuner AGC Output voltage), 300mV (Output saturation voltage)

55. Audio deemphasis : 500mVrms
56. Decoupling sound demodulator

UV1315, UV1316, UV1336

General description of UV1315:
The UV1315 tuner belongs to the UV1300 familiy of tuners, which are designed to meet a wide range of applications. It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1315:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR:B/G, H, L, L', I and I'; OIRT:D/K
- Voltage synthesized tuning (VST)
- Off-air channels, S-cable channels and Hyperband
- Standardized mechanical dimensions and pinning
- Compact size

PINNING **PIN VALUE**
1. Gain control voltage (AGC) : 4.0V, Max:4.5V
2. Tuning voltage
3. High band switch : 5V, Min:4.75V, Max:5.5V
4. Mid band switch : 5V, Min:4.75V, Max:5.5V
5. Low band switch : 5V, Min:4.75V, Max:5.5V
6. Supply voltage : 5V, Min:4.75V, Max:5.5V
7. Not connected
8. Not connected
9. Not connected
10. Symmetrical IF output 1
11. Symmetrical IF output 2

Bandswitching table:

	Pin 3	Pin 4	Pin 5
Low band	0V	0V	+5V
Mid band	0V	+5V	0V
High band	+5V	0V	0V

General description of UV1316:

The UV1316 tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1316:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally controlled (PLL) tuning via I²C-bus
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Complies to "CENELEC EN55020" and "EN55013"

PINNING **PIN VALUE**
1. Gain control voltage (AGC) : 4.0V, Max:4.5V
2. Tuning voltage
3. I²C-bus address select : Max:5.5V
4. I²C-bus serial clock : Min:-0.3V, Max:5.5V
5. I²C-bus serial data : Min:-0.3V, Max:5.5V
6. Not connected
7. PLL supply voltage : 5.0V, Min:4.75V, Max:5.5V
8. ADC input
9. Tuner supply voltage : 33V, Min:30V, Max:35V
10. Symmetrical IF output 1
11. Symmetrical IF output 2

General description of UV1336:
UV1336 series is developed for reception of channels broadcast in accordance with the M, N standard. The tuning is available through built-in digitally controlled IıC bus (PLL).

Features of UV1336:
- Global standard pinning
- Integrated Mixer-Oscillator&PLL function
- Conforms to CISPR 13, FCC and DOC (Canada) regulations
- Low power consumption

- Both Phono connector and 'F' connector are available

PINNING	PIN VALUE
1. Gain control voltage	: 4.0V, Max:4.5V
2. Tuning voltage	
3. Address select	: Max:5.5V
4. Serial clock	: Min:-0.3V, Max:5.5V
5. Serial data	: Min:-0.3V, Max:5.5V
6. Not connected	
7. Supply voltage	: 5.0V, Min:4.75V, Max:5.5V
8. ADC input (optional)	
9. Tuning supply voltage	: 33V, Min:30V, Max:35V
10. Ground	
11. IF output	

TEA6415C:

General Description:

The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.
Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.
All switching possibilities are controlled through the I²C-bus.

Features:

- 20MHz Bandwith
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 inputs (CVBS, RGB, Mac, CHROMA, …)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled
- 6.5dB gain between any input and output
- -55dB crosstaljk at 5MHz
- Fully ESD protected

PINNING	PIN VALUE					
1. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
2. Data	:	Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
3. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
4. Clock	:	Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
5. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
6. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
7. Prog						
8. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
9. Vcc	:	12V				
10. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
11. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
12. Ground						
13. Output	:	5.5Vpp,	Min : 4.5Vpp			
14. Output	:	5.5Vpp,	Min : 4.5Vpp			
15. Output	:	5.5Vpp,	Min : 4.5Vpp			
16. Output	:	5.5Vpp,	Min : 4.5Vpp			
17. Output	:	5.5Vpp,	Min : 4.5Vpp			
18. Output	:	5.5Vpp,	Min : 4.5Vpp			
19. Ground						
20. Input	:	Max : 2Vpp, Input Current		: 1mA,	Max	: 3mA

TDA9830:

General description:

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L- and L'-standard.
The IC provides an audio source selector and also mute switch.

Features:

- Adjustment free wideband synchronous AM demodulator
- Audio source-mute switch (low noise)
- Audio level according EN50049
- 5 to 8V power supply or 12 V alternative
- Low power consumption

PINNING	PIN VALUE
1. Sound IF differential input signal	: Minimum IF input signal (between pins 1 and 16):60mV Max:100mV Maximum IF input signal (between pins 1 and 16) :120mV Min :70mV
2. Not connected	
3. AGC capacitor	
4. REF voltage filtering capacitor	
5. Not connected	

6. AM demodulator output : THD:0.8%, Max:2%; S/N:53dB, Min:47%; DC potential:2.15V, Min : 2.00V Max :2.30V
7. Input signal (from AM) to audio switch : Max:1.2V
8. Output signal from audio switch : 80dB, Min : 70dB
9. Input signal (from external) to audio switch : Max:1.2V
10. Switch input select control : Audio switching voltage to activate pin7 : Min :0V, Max :0.8V
    Audio switching voltage to activate pin9 : Min:1.5V, Max :Vp
11. Supply voltage : 12V, Min:10.8V, Max:13.2V
12. Mute control : For Mute-ON Min : 0V, Max : 0.8V For Mute-OFF Min : 1.5V, Max : Vp
13. Ground
14. Supply voltage : 5V, Min : 4.5V, Max : 8.8V
15. Not connected
16. Sound IF differential input signal : Look at pin 1

TDA2614/TDA2615/TDA2616Q:

General Description of TDA2614:

The TDA2614 is a power amplifier in a 9-lead single-in-line (SIL9) plastic medium power package. It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Not connected	
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Not connected	
5. Supply voltage (negative)	: -12VDC
6. Output	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting input (Ground)	: 0V
9. Non-inverting input	: 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2615:

The TDA2615 is a dual power amplifier in a 9-lead single-in-line (SIL9). It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Non-inverting input 1	: 700mVrms, Min :500mVrms, Max : 900mVrms
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Output 1	: 6.9Vrms
5. Supply voltage (negative)	: -12VDC
6. Output 2	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting inputs 1 and 2 (Ground)	: 0V
9. Non-inverting input 2	: 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2616Q:

The TDA2616Q is a dual power amplifier. It is supplied in a 9-lead SIL-bent-to DIL plastic power package (SOT157).
It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Non-inverting input 1	: 700mVrms, Min : 500mVrms, Max : 900mVrms
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Output 1	: 9.8Vrms
5. Supply voltage (negative)	: -16VDC
6. Output 2	: 9.8Vrms
7. Supply voltage (positive)	: +16VDC
8. Inverting inputs 1 and 2 (Ground)	: 0V
9. Non-inverting input 2	: 700mVrms, Min : 500mVrms, Max : 900mVrms

TDA8351/8356:

General Description:

The TDA8356 is a power circuit for use in 90° colour deflection system for field frequencies of 50 to 120Hz.
The circuit operates as a highly efficient class G system.
The TDA8351 is a power circuit for use in 110° colour deflection system for field frequencies of 50 to 120Hz.
The circuit operates as a highly efficient class G system.

Features:

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins (7 and 4)
  - short-circuit of the output pins to Vp
- Temperature (thermal) protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode

PINNING	PIN VALUE
1. Input power-stage (positive); includes Ii(sb) signal bias	: 400mA, Min : 50mA, Max : 500mA
2. Input power-stage (negative); includes Ii(sb) signal bias	:400mA, Min : 50mA, Max : 500mA
3. Operating supply voltage	: +15VDC
4. Output voltage B	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
5. Ground	
6. Input flyback supply voltage	: Min : Vp, Max : 50V
7. Output voltage A	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
8. Guard output voltage	: Max:5.5V (Io:100mA)
9. Input feedback voltage	: Max:52V

TDA6107Q:

The TDA6107Q includes three video output amplifiers in a SIL 9 MP (Single In Line 9 pins Medium Power) package SOT111BE, using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour picture tube.
In contrast to previous types of DMOS video amplifiers, all external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and it saves 9 resistors.
To obtain maximum performance, the amplifier should be used with black-current control and mounted on the CRT panel.

Features:

- Bandwith: 4.0MHz typ at 100Vpp (Measured in application set-up, with Rfl=1K5 and Cl=Ctube+Cpcb=10pF)
- Slewrate: 950V/ms
- Fixed gain of 50 times
- No external components, only the well known supply decoupling
- Very simple application with a variety of colour decoders
- Black-current measurement output for automatic black current stabilization
- Only one supply voltage needed
- Internal protection against positive appearing CRT flash-over discharges
- Protection against ESD
- Internal reference voltage
- Thermal protection
- Controllable switch-off behaviour
- Very small PCB dimensions
- Very high replacement value

PINNING	PIN VALUE
1. Inverting input 1	: 2Vpp
2. Inverting input 2	: 2Vpp
3. Inverting input 3	: 2Vpp
4. Ground	
5. BSC-output	: Max:7V
6. Supply voltage	: 200VDC
7. Cathode output 3	: 20mA, 100Vpp
8. Cathode output 2	: 20mA, 100Vpp

9. Cathode output 1 : 20mA, 100Vpp

SAA4961:

The SAA4961 is an adaptive alignment-free one chip comb filter compatible with both PAL and NTSC systems and provides high performance in Y/C separation.

Features:

- One chip adaptive multi-standard comb filter
- Time discrete but continuous amplitude signal processing with analogue interfaces
- Internal delay lines, filters, clock processing and signal switches
- Alignment-free
- No hanging dots or residual cross colour on vertical transients
- Few external components

It is possible to switch the comb filter into one of the following 3 modes:

1. **Comb mode** : In this mode, luminance and chrominance comb filter function are active. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs comb filtered luminance signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.
2. **Comboff mode** : In this mode, luminance comb filter function is turned off, but chrominance comb filter function operates. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs delay compensated CVBS signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.
3. **Bypass mode** : In this mode, no IC-function is active. Cext is bypassed to chrominance output pin (pin 12) and Yext/CVBS is bypassed to luminance output pin (pin 14) and CVBS output pin (pin 15).

PINNING	**PIN VALUE**
1. Subcarrier frequency input	: 200mVpp, Min : 100mVpp, Max : 400mVpp
2. Internal connected	
3. Bypass mode forcing	: HIGH level input voltage Min : 2.4VDC, Max : Vcc
4. Internal connected	
5. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
6. Internal connected	
7. Analogue supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
8. Analogue supply voltage output buffer	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
9. Analogue ground	
10. External chrominance input	: 0.7Vpp, Max : 1Vpp
11. Analogue ground output buffer	
12. Chrominance output signal	: 0mV, Min : -400mV, (DC offset voltage related to input) Max : +400mV BYPASS-mode:Co/Cext : 0dB, Min : -1dB, Max : +1dB
13. fsc reference selection	: HIGH level input voltage Min : 2V, Max : Vcc : Low level input voltage Min : 0V, Max : 0.8V
14. Luminance output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
15. CVBS and Y output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
16. Internal connected	
17. CVBS and Y input signal	: 1Vpp, Min : 0.7Vpp, Max : 1.4Vpp
18. Disable prefilter	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
19. Storage Capacitor	: 2.5VDC, Min : 1.8VDC, Max : Vcc
20. Standard select 1	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
21. Digital ground	
22. Digital supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
23. Standard select 2	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
24. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
25. Controlling I/O pin	: HIGH level input voltage Min : 2.4VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 1.5VDC
26. Analogue ground PLL	
27. Analogue supply voltage PLL	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
28. Internal connected	

MC44604:

General description:

The MC44604 is an enhanced high performance controller that is specifically designed for off-line and DC-to-DC converter applications. It offers a really safe and reliable power management thanks particularly to its protection features (foldback, overvoltage detection, soft start, accurate demagnetization detection). Its high current totem pole output is also ideally suited for driving a power MOSFET, but can also be used for driving a bipolar transistor in low power converters. In addition to these features, the MC44604 offers an efficient stand-by mode.

Features:

Current Mode Controller

- Operation up to 250 kHz Output Switching Frequency
- Inherent Feed Forward Compensation
- Latching PWM for Cycle-by-Cycle Current Limiting
- Oscillator with Precise Frequency Control

High Flexibility
- Externally Programmable Reference Current
- Secondary or Primary Sensing
- High Current Totem Pole Output
- Undervoltage Lockout with Hysteresis

Safety/Protection Features
- Overvoltage Protection Facility against Open Loop
- Protection against Short Circuit on Oscillator Pin
- Fully Programmable Foldback
- Soft-Start Feature
- Accurate max Duty Cycle Setting
- Demagnetization (Zero Current Detection) Protection
- Internally Trimmed Reference

"Green Controller"
- Low Start-Up and Operating Current
- Patented Stand-by Pulsed Mode for low stand-by losses
- Low dV/dT for Low EMI radiations

PINNING	PIN VALUE
1. Output Supply Voltage (Vcc)	: 12VDC
2. Output Supply Voltage (Vc)	: 12VDC
3. Output voltage	: LOW Level Drop Voltage 1VDC, Max : 1.2VDC (Isink=100mA) 1.4VDC, Max : 2VDC (Isink=500mA) HIGH Level Drop Voltage 1.5VDC, Max : 2VDC (Isource=200mA) 2VDC, Max : 2.7VDC (Isource=500mA)
4. Ground	
5. Foldback input	: 0.9VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
6. Overvoltage protection (OVP)	: 0.78VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
7. Current sense input	: Min:-0.3VDC, Max : Vcc+0.3VDC
8. Demagnetization detection input	: Idemag-ib (source):-4mA Idemag-ib (sink) : 10mA
9. Standby current set	: Ipeak-stby/Iref : 0.40 Min : 0.37 Max : 0.43
10. Oscillator voltage swing	: 2Vpp
11. Soft start/Dmax/Voltage mode	: Idischarge : 5mA, Min : 1.5mA (Vsoft start=1V)
12. Clamp E/A input	: 4.7VDC, Min : 4.5VDC Max : 4.9VDC
13. E/A output	: HIGH State: 6.5VDC, Min : 5.5VDC, Max : 7.5VDC LOW State : 1.0VDC, 1.1VDC
14. E/A input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC
15. Stand-by management	: Stand-by On Detection current ratio : Idet/Iref : 0.38, Min : 0.34, Max : 0.42 Stand-by regulation current ratio : Ireg/Iref : 20.5, Min : 18, Max : 23
16. Rref input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC

SDA525X:

General description:

The SDA525X is designed for a low cost mono TV-set with analogue picture and sound control. IN SDA525X the following IC' s are used and supported:

Non-volatile memory	: SDA2526 or SDA2546
PLL	: SDA3202-3, SDA3302
IR transmitter	: SDA2208-3 or SDA2218
IR preamplifier	: SFH506-32

Features:

General:
- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD
- Single LED for IR active, standby and on mode indication
- Local control (8 keys)
- IR remote control
- Control of volume, contrast, brightness, and saturation by analogue voltages
- Non-volatile memory for 50 or 100 programs, optimum analogue values and system parameters
- Individual delta volume for each program
- 1 control line to select external source
- 3 control lines for TV standard selection
- Automatic muting if no carrier detected
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer
- Parental control
- IF 38MHz or 38.9MHz selectable

Tuning:
- Frequency synthesis tuning (62.5KHz steps)
- 192 step fine tuning
- Channels corresponding to standards
- 100 programs selectable by directly entering a program number or by up/down function depending on the NVM size
- Channel selection by directly entering a channel number or by up/down function
- Channel search function in two directions

Sound:
- Mono sound control by analogue voltage

Service Mode:
- System configuration with service mode

PINNING	PIN VALUE
1. Crystal selection output 1	: LOW level : 0V HIGH level : 4.2V
2. Volume + switch input	: LOW level : 0V HIGH level : 5V
3. Volume - switch input	: LOW level : 0V HIGH level : 5V
4. Program - switch input	: LOW level : 0V HIGH level : 5V
5. Program + switch input:	: LOW level : 0V HIGH level : 5V
6. LED output	: LOW level : 0V HIGH level : 4.2VDC
7. Filter (sound standard) selection output 1	: LOW level : 0V HIGH level : 4.2V
8. Filter (sound standard) selection output 2	: LOW level : 0V HIGH level : 4.2V
9. Mod-switch selection output	: LOW level : 0V HIGH level : 4.2V
10. Ground	
11. Supply voltage	: +5V
12. 18 MHz crystal connection 1	: 2Vpp
13. 18 MHz crystal connection 2	: 2Vpp
14. L-ACC output	: LOW level : 0V HIGH level : 3.6V
15. RESET output	LOW level : 0V HIGH level : 5V
16. Comb filter PAL/SECAM selection output	: LOW level : 0V HIGH level : 5V
17. Tuning output	: LOW level : 0V HIGH level : 3.4V
18. Audio switch transistor selection 1	: LOW level : 0V HIGH level : 5V
19. Audio switch transistor selection 2	: LOW level : 0V HIGH level : 5V
20. Audio switch transistor selection 3	: LOW level : 0V HIGH level : 5V
21. Audio switch transistor selection 4	: LOW level : 0V HIGH level : 5V
22. Comb filter standard selection 1	: LOW level : 0V HIGH level : 5V
23. Comb filter standard selection 2	: LOW level : 0V HIGH level : 5V
24. Analogue ground	
25. Filter 3	
26. Filter 2	
27. Filter 1	
28. Analogue supply voltage	: 5VDC
29. Reference current input	
30. CVBS input	: 1Vpp
31. Service output	: LOW level : 0V HIGH level : 5V
32. AV2-status input	: LOW level : 0V HIGH level : 5V
33. AV1-status input	: LOW level : 0V HIGH level : 5V
34. AFC output	: 600mVpp
35. Ground	
36. IR-input	: LOW level : 0V HIGH level : 5V
37. Supply voltage	: 5V
38. LC input	: 5Vpp
39. LC output	: 5Vpp
40. Mute output	: LOW level : 0V HIGH level : 4.2V
41. St-by output	: LOW level : 0V HIGH level : 1.4V
42. Clock signal output	
43. Data output	
44. Local connection	: LOW : 0V HIGH : 5V
45. SAND input	: 4Vpp
46. ODD/EVEN output	: 1.8V
47. OSD-red output	: LOW level : 0V HIGH level : 5V
48. OSD-green output	: LOW level : 0V HIGH level : 5V
49. OSD-blue output	: LOW level : 0V HIGH level : 5V
50. OSD-blanking output	: LOW level : 0Vh

		HIGH level : 5V
51. COR output	:	LOW level : 0V
		HIGH level : 5V
52. Crystal selection output 2	:	LOW level : 0V
		HIGH level : 4.2V

TDA9875:

General description:

The TDA9875 is a single-chip Digital TV Sound Processor (DTVSP) for analogue and digital multi-channel sound systems.

Features:

Demodulator and decoder section:

- Sound IF (SIF) input switch e.g. to select between terrestrial TV SIF and SAT SIF sources
- SIF AGC with 21dB control range
- SIF 8-bit Analogue-to-Digital Converter (ADC)
- DQPSK demodulation for different standards, simultaneously with 1-channel FM demodulation
- NICAM decoding (B/G, I and L standard)
- Two-carrier multistandard FM demodulation (B/G, D/K and M standard)
- Decoding for three analogue multi-channel systems (A2, A2+ and A2*) and satellite sound
- Optional AM demodulation for system L, simultaneously with NICAM
- Programmable identification (B/G, D/K and M standard) and different identification times

DSP section:

- Digital crossbar switch for all digital signal sources and destinations
- Control of volume, balance, contour, bass, treble, pseudo stereo, spatial, bass boost and soft-mute
- Plop-free volume control
- Automatic Volume Level (AVL) control
- Adaptive de-emphasis for satellite
- Programmable beeper
- Monitor selection for FM/AM DC values and signals, with peak detection option
- I²S-bus interface for a feature extension (e.g. Dolby surround) with matrix, level adjust and mute.

Analogue audio section:

- Analogue crossbar switch with inputs for mono and stereo, SCART1 input/output, SCART2 input/output and line output
- User defined full-level/-3dB scaling for SCART outputs
- Output selection of mono, stereo, dual A/B, dual A or dual B
- 20 kHz bandwith for SCART-to-SCART copies
- Standby mode with functionality for SCART copies
- Dual audio digital-to-analogue converter from DSP to analogue crossbar switch, bandwith 15kHz
- Dual audio ADC from analogue inputs to DSP
- Two dual audio Digital-to-Analogue Converters (DACs) for loudspeakers (Main) and headphone (Auxiliary) outputs; also applicable for L, R, C and S in the Dolby Pro Logic mode with feature extension.

PINNING		**PIN VALUE**
1. NICAM clock output (728kHz)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
2. Serial NICAM DATA output (728kHz)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
3. First I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
4. SCL (I²C-bus clock)	:	LOW level input voltage : Max : 1.6V HIGH level input voltage : Min : 3.0V
5. SDA (I²C-bus data)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
6. Analogue supply ground 1	:	0V
7. Analogue supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
8. Resistor for reference current generator	:	Iref : 220mA, Min : 170mA, Max : 260mA
9. First general purpose I/O pin		
10. Sound IF input 2	:	Min : 21Vrms, Max : 250mVrms
11. Reference voltage for demodulator part	:	Vdda1/Vssa1 : 50%, Min : 35%, Max : 65%
12. Sound IF input 1	:	Min : 21Vrms, Max : 250mVrms
13. Second I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
14. Digital supply ground 1	:	0V
15. Digital supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
16. Capacitor for power-on reset	:	LOW level input voltage : Max : 1.6V HIGH level input voltage : Min : 3.0V
17. Crystal oscillator output		
18. Crystal oscillator input		
19. Tuning voltage output for crystal oscillator		
20. Second general purpose I/O pin		
21. System clock output	:	LOW level input voltage : Max : 0.5V HIGH level input voltage : Min : 2.9V
22. I²S-bus clock	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
23. I²S-bus word select	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
24. I²S-bus data output 2	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
25. I²S-bus data output 1	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
26. I²S-bus data input 2	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V

27. I²S-bus data input 1 : LOW level input voltage : Max : 0.8V
HIGH level input voltage : Min : 2.0V
28. First test pin; connected to ground for normal operation
29. Audio mono input : 500mVrms
30. Second test pin; connected to ground for normal operation
31. External audio input right channel : 350mVrms
32. External audio input left channel : 350mVrms
33. SCART 1 input right channel : 350mVrms
34. SCART 1 input left channel : 350mVrms
35. Ground guards
36. SCART 2 input right channel : 350mVrms
37. SCART 2 input left channel : 350mVrms
38. Analogue supply voltage 2 : 5V, Min : 4.75V, Max : 5.5V
39. Positive reference voltage
40. Reference voltage ground : 0V
41. Filter capacitor pin 1
42. Filter capacitor pin 2
43. Analogue supply ground 2 : 0V
44. Filter capacitor pin 2
45. Filter capacitor pin 1
46. Reference voltage 2 : Vdda2/Vssa2 : 50%
47. Scart 1 output right channel : 500mVrms
48. Scart 1 output left channel : 500mVrms
49. Digital supply ground 2 : 0V
50. Analogue supply ground 4 : 0V
51. Scart 2 output right channel : 500mVrms
52. Scart 2 output left channel : 500mVrms
53. Reference voltage 3 : Vdda3/Vssa3:50%
54. Post-filter capacitor pin right channel
55. Post-filter capacitor pin left channel
56. Analogue supply ground 3 : 0V
57. Headphone output right channel : Vo(clip) : Min : 1400mVrms
58. Headphone output left channel : Vo(clip) : Min : 1400mVrms
59. Analogue supply voltage 3 : 5.0V, Min : 4.75V, Max : 5.5V
60. Loudspeaker (main) output right channel : Vo(clip) : Min : 1400mVrms
61. Loudspeaker (main) output left channel : Vo(clip) : Min : 1400mVrms
62. Line output left channel : 500mVrms
63. Line output right channel : 500mVrms
64. Digital supply voltage 2 : 5.0V, Min : 4.75V, Max : 5.5V

TDA9818:

General description:

The TDA9818 is an integrated circuit for multistandard vision IF signal processing, sound AM and FM demodulation.

Features:

- 5 V supply voltage
- Applicable for IF frequencies of 38.9MHz, 45.75MHz and 58.75MHz
- Gain controlled wide band VIF-amplifier (AC-coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for overmodulation better than 105% due to gated phase detector at L/L accent standard and PLL-bandwidth control at negative modulated standards
- VCO frequency switchable between L and L accent (alignment external) picture carrier frequency
- VIF AGC detector for gain control, operating as peak sync detector for B/G, peak white detector for L; signal controlled reaction time for L
- Tuner AGC with adjustable takeover point (TOP)
- AFC detector without extra reference circuit
- AC-coupled limiter amplifier for sound intercarrier signal
- Alignment-free FM-PLL demodulator with high linearity
- SIF input for single reference QSS mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode
- AM demodulator without extra reference circuit
- Stabilizer circuit for ripple rejection and to achieve constant output signals
- ESD protection for all pins

PINNING **PIN VALUE**

1. VIF differential input signal voltage 1 : Input signal voltage sensitivity 60mVrms, Max:100mVrms
2. VIF differential input signal voltage 2 : Input signal voltage sensitivity 60mVrms, Max:100mVrms
3. Standard switch : Min : 2.8V, Max : Vp
4. VIF AGC capacitor : **Charging current** : 1mA, Min : 0.75mA, Max : 1.25mA
Discharging current : B/G standard : 20mA, Min : 15mA, Max:25mA
Normal mode L : 300nA, Min : 225nA, Max : 375nA
Fast mode L : 40mA, Min : 30mA, Max : 50mA
5. SIF AGC capacitor : **Charging current** : FM mode : 12mA, Min : 8mA, Max : 16mA
AM mode : 1.2mA, Min : 0.8mA, Max : 1.6mA
Discharging current : FM mode : 12mA, Min : 8mA, Max : 16mA
Normal mode AM : 1.4mA, Min : 1mA, Max : 1.8mA
Fast mode AM : 85mA, Min : 60mA, Max : 110mA
6. PLL loop filter : Min : 0V, Max : Vp
7. L/L accent switch and adjust : Min : 0V, Max : Vp

8. Audio output	:	Rx : 470ohm : 250mVrms, Min : 200mVrms, Max : 300mVrms Rx : 0ohm : 500mVrms, Min : 400mVrms, Max : 600mVrms
9. De-emphasis input	:	Min : 0V, Max : Vp
10. De-emphasis output	:	Min : 0V, Max : Vp
11. Decoupling capacitor	:	Min : 0V, Max : Vp
12. Single reference QSS/intercarrier output voltage	:	140mVrms, Min : 100mVrms Max: 180mVrms
13. Sound intercarrier input voltage	:	Input signal voltage for lock-in: Max : 100mVrms Input signal voltage : 250mVrms
14. Tuner AGC output	:	IF input signal voltage for minimum starting point of tuner takeover 2mV, Max : 5mV IF input signal voltage for maximum starting point of tuner takeover 100mV, Min : 50mV
15. Black level detector	:	Min : 0V, Max : Vp
16. Composite video output voltage	:	1.1Vpp, Min : 0.97Vpp, Max : 1.23Vpp
17. AFC output	:	Upper limit : Vp-0.3V, Min : Vp-0.6V, Lower limit : 0.3V, Max : 0.6V
18. VCO1 resonance circuit		
19. VCO2 resonance circuit		
20. Ground	:	0V
21. Supply voltage	:	5V, Min : 4.5V, Max : 5.5V
22. Tuner AGC takeover adjust (TOP)		
23. SIF differential input signal voltage 1	:	Input signal voltage sensitivity 50mVrms, Max : 100mVrms
24. SIF differential input signal voltage 2	:	Input signal voltage sensitivity 50mVrms, Max : 100mVrms

ST24C08:

General description:

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organized as 4 blocks of 256 * 8 bits.
The memory operates with a power supply value as low as 2.5V. Both Plastic Dual-in-Line and Plastic Small Outline packages are available.

Features:

- Minimum 1 million ERASE/WRITE cycles with over 10 years data retention
- Single supply voltage:4.5 to 5.5V
- Two wire serial interface, fully IıC-bus compatible
- Byte and Multibyte write (up to 8 bytes)
- Page write (up to 16 bytes)
- Byte, random and sequential read modes
- Self timed programming cycle

PINNING		PIN VALUE
1. Write protect enable (Ground)	:	0V
2. Not connected (Ground)	:	0V
3. Chip enable input (Ground)	:	0V
4. Ground	:	0V
5. Serial data address input/output	:	Input LOW voltage : Min : -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
6. Serial clock	:	Input LOW voltage : Min: -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
7. Multibyte/Page write mode	:	Input LOW voltage : Min: -0.3V, Max :0.5V Input HIGH voltage: Min : Vcc-0.5, Max : Vcc+1
8. Supply voltage	:	Min : 2.5V, Max : 5.5V

TDA1308:

Features:

- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection
- Low power consumption
- Short-circuit resistant
- High performance
  - high signal-to-noise ratio
  - high slew rate
  - low distortion
- Large output voltage swing

PINNING		PIN VALUE
1. Output A (Voltage swing)	:	Min : 0.75V, Max : 4.25V
2. Inverting input A	:	Vo(clip) : Min : 1400mVrms
3. Non-inverting input A	:	2.5V
4. Ground	:	0V
5. Non-inverting input B	:	2.5V
6. Inverting input B	:	Vo(clip) : Min : 1400mVrms
7. Output B (Voltage swing)	:	Min : 0.75V, Max : 4.25V
8. Positive supply :		5V, Min : 3.0V, Max : 7.0V

G1965M:

Features:

- TV IF filter with Nyquist slope and sound shelf at typ. 20.4dB
- High colour carrier level at typ. 1.0dB
- Constant group delay

TDA9855

General description:

The TDA9855 is a bipolar-integrated BTSC stereo/SAP decoder with hi-fi audio processor (IIC-bus controlled) for application in TV sets.

Features:

- Quasi alignment-free BTSC stereo decoder due to auto adjustment of channel separation via IIC-bus
- High integration level with automatically tuned integrated filters
- Input level adjustment I²C-bus controlled
- Alignment-free Sap processing
- dbx noise reduction circuit
- Audio processor
  - -Selector for internal and external signals (line in)
  - -Automatic volume level control
  - -Subwoofer or surround output with separate volume control
  - -Volume control
  - -Special loudness characteristic automatically controlled in combination with volume setting
  - -Bass and treble control
  - -Audio signal zero crossing detection between any volume step switching
  - -Mute control at audio signal zero crossing
  - -I²C-bus tranceiver.

PINNING	PIN VALUE
1. Treble control capacitor, left channel	
2. Bass control capacitor, left channel	
3. Bass control capacitor, left channel	
4. Not connected	
5. Programmable address bit (module address)	
6. Output, left channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
7. Input loudness, left channel	
8. Input volume control, left channel	: 2.15Vrms, Min : 2Vrms
9. Output effects, left channel	
10. Automatic volume control capacitor	
11. Reference voltage 0.5Vcc	: 4VDC
12. Line input, left channel	: 2.3Vrms, Min : 2Vrms
13. Input automatic volume control, left channel	: Min : 2Vrms
14. Output selector, left channel	
15. Line output, left channel	: 500mVrms
16. Capacitor timing wideband for dbx	
17. Capacitor timing spectral for dbx	
18. Capacitor wideband for dbx	
19. Capacitor spectral for dbx	
20. Variable emphasis out for dbx	
21. Variable emphasis in for dbx	
22. Capacitor noise reduction for dbx	
23. Capacitor mute for SAP	
24. Capacitor DC decoupling for SAP	
25. Common ground	: 0V
26. Serial data input/output	: High level input voltage : Min : 3VDC, Max : Vcc : Low level input voltage : Min : -0.3VDC, Max : 1.5VDC : Low level output voltage : Max : 0.4VDC
27. Serial clock input	: High level input voltage: Min : 3VDC, Max : Vcc Low level input voltage : Min : -0.3VDC, Max : 1.5VDC : Low level output voltage : Max : 0.4VDC
28. Supply voltage	: 8VDC
29. Input composite signal	: 250mVrms
30. Capacitor for electronic filtering of supply	
31. Capacitor for pilot detector	
32. Capacitor for pilot detector	
33. Capacitor for phase detector	
34. Capacitor for filter adjust	
35. Ceramic resonator	
36. Capacitor DC decoupling mono	
37. Capacitor DC decoupling stereo/SAP	
38. Line output, right channel	: 500mVrms
39. Output selector, right channel	
40. Input automatic volume control, right channel	: Min:2Vrms
41. Line input, right channel	: 2.3Vrms, Min : 2Vrms
42. Capacitor 2 pseudo function	
43. Capacitor 1 pseudo function	
44. Output effects, right channel	
45. Input volume control, right channel	: Min : 2Vrms
46. Input loudness, right channel	
47. Output, right channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
48. Not connected	
49. Filter capacitor for subwoofer	
50. Bass control capacitor, right channel	
51. Bass control capacitor, right channel	
52. Treble control capacitor	

■ Insertion attenuation typ. 15.0dB

PINNING

1. Input
2. Input-ground
3. Chip carrier-ground

MANUAL ADJUSTMENTS PROCEDURE

In order to enter the service menu, first enter the installation menu and then press the digits 4, 7, 2 and 5 respectively.

For ADJUST settings:

Select **Adjust** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

WHITE BALANCE ADJUSTMENT:

The following three parameters are used to make white balance adjustment. To do this, use a Colour Analyser. Using white point RED, white point GREEN and white point BLUE parameters, insert the + sign in the square which is in the middle of the screen.

ADJUST 00 = White Point RED
ADJUST 01 = White Point GREEN
ADJUST 02 = White Point BLUE

AGC ADJUSTMENT:

In order to do AGC adjustment, enter a 60dBmV RF signal level from channel C-12.
Connect a digital voltmeter to pin 1 of the tuner. Change the AGC parameter until you see 3.70VDC on voltmeter display. Check that picture is normal at 90dBmV signal level.

ADJUST 03 = AGC

IF-PLL NEGATIVE ADJUSTMENT (Only with PLL tuner):

Connect 38.9MHz test pattern for PAL B/G, PAL-SECAM B/G, 39.5MHz test pattern for PAL I or 45.75MHz test pattern for PAL M/N, NTSC M model to Z401 SAW filter input terminals. Change the IF-PLL Negative parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.

ADJUST 04 = IF-PLL Negative

IF-PLL POSITIVE ADJUSTMENT (Only with PLL tuner):

Connect 33.9MHz test pattern for SECAM L' model to Z401 SAW filter input terminals. Change the IF-PLL Positive parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.

ADJUST 05 = IF-PLL Positive

LUMINANCE DELAY ADJUSTMENT (with only TDA 8844 video processor):

ADJUST 06 = Y-Delay PAL

Enter a PAL B/G colour and black-white bar test pattern via RF. Adjust Y-Delay PAL till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Note: If the SAW filter is one of the G1965M, J1951M, J3950M, K2958M, K2962M, G3957M, K6256K, K6259K or M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

ADJUST 07 = Y-Delay SECAM

Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Note: If the SAW filter is one of the G1965M, K2958M, K2962M, G3957M, K6256K or K6259K, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

ADJUST 08 = Y-Delay NTSC

Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Note: If the SAW filter is M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

ADJUST 09 = Y-Delay Other

In case of other colour systems, enter this system with colour and black-white bar test pattern via RF. Adjust Y-Delay Other till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible. Normally for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

VERTICAL ZOOM ADJUSTMENT (only for 110° picture tubes):

ADJUST 10 = Vertical Zoom

Enter a PAL B/G circle test pattern via RF. Change vertical zoom till you see the upper and lower limit of the circle as close to the upper and lower limit of the picture tube as possible.

VERTICAL SCROLL ADJUSTMENT (only for 110° picture tubes):

ADJUST 11 = Vertical Scroll

Enter a PAL B/G circle test pattern via RF. Change vertical scroll till you see the circle exactly in the middle of the screen.

4:3 HORIZONTAL SHIFT ADJUSTMENT:

ADJUST 12 = 4 : 3 Horizontal Shift

Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

4:3 VERTICAL SLOPE ADJUSTMENT:
ADJUST 13 = 4 : 3 Vertical Slope
Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern. Check and readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.
4:3 VERTICAL AMPLITUDE ADJUSTMENT:
ADJUST 14 = 4 : 3 Vertical Amplitude
Enter a PAL B/G test pattern via RF. Change vertical slope till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 S-CORRECTION ADJUSTMENT:
ADJUST 15 = 4 : 3 S-Correction
Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

4:3 VERTICAL SHIFT ADJUSTMENT:
ADJUST 16 = 4 : 3 Vertical Shift
Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW WIDTH ADJUSTMENT (only for 110° picture tubes):
ADJUST 17 = 4 : 3 EW Width
Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

4:3 EW PARABOLA WIDTH ADJUSTMENT (only for 110° picture tubes):
ADJUST 18 = 4 : 3 EW Parabola Width
Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW CORNER PARABOLA ADJUSTMENT (only for 110° picture tubes):
ADJUST 19 = 4 : 3 EW Corner Parabola
Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW TRAPEZIUM ADJUSTMENT (only for 110° picture tubes):
ADJUST 20 = 4 : 3 EW Trapezium
Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 HORIZONTAL SHIFT ADJUSTMENT:
ADJUST 21 = 16 : 9 Horizontal Shift
Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

16:9 VERTICAL SLOPE ADJUSTMENT:
ADJUST 22 = 16 : 9 Vertical Slope
Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern. Check and readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 VERTICAL AMPLITUDE ADJUSTMENT:
ADJUST 23 = 16 : 9 Vertical Amplitude
Enter a PAL B/G test pattern via RF. Change vertical slope till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 S-CORRECTION ADJUSTMENT:
ADJUST 24 = 16 : 9 S-Correction
Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

16:9 VERTICAL SHIFT ADJUSTMENT:
ADJUST 25 = 16 : 9 Vertical Shift
Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW WIDTH ADJUSTMENT (only for 110° picture tubes):
ADJUST 26 = 16 : 9 EW Width
Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

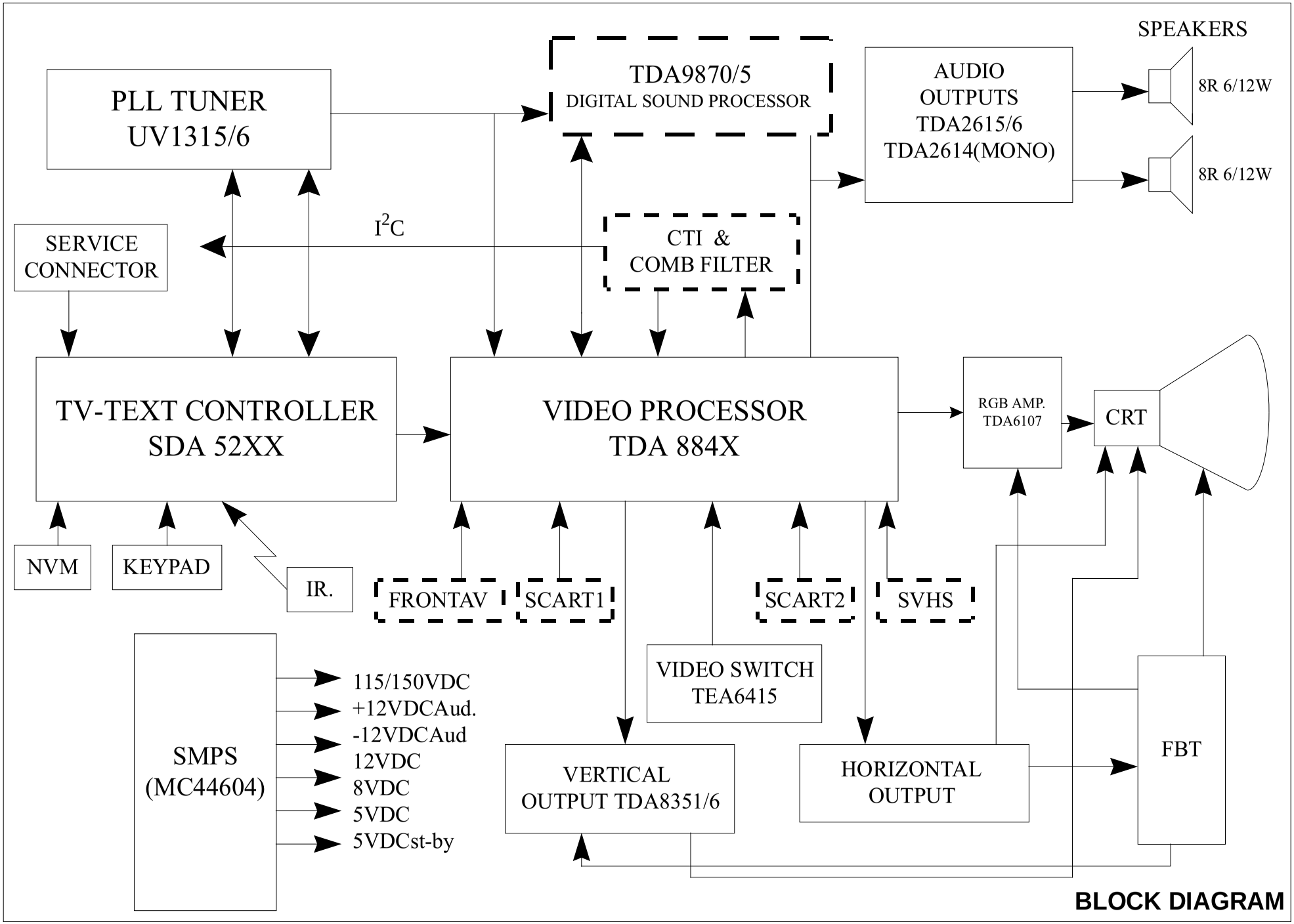
16:9 EW PARABOLA WIDTH ADJUSTMENT (only for 110° picture tubes):

ADJUST 27 = 16 : 9 EW Parabola Width
Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW CORNER PARABOLA ADJUSTMENT (only for 110° picture tubes):
ADJUST 28 = 16 : 9 EW Corner Parabola
Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW TRAPEZIUM ADJUSTMENT (**only for 110° picture tubes):**
ADJUST 29 = 16 : 9 EW Trapezium
Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.
For OPTION settings:

Select OPTION using ▼ or ▲ button and press ► or ◄ button to enter it. To select different option bytes, use ▼ or ▲ button.
Using ► or ◄ button select the bit you want to set and then set it pressing 0 or 1 button.



GENERAL BLOCK DIAGRAM

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Option 0.

B7:	Ina	=	x
B6:	Inb	=	x
B5:	Inc	=	x
B4:	Akb	=	0
B3:	Foa	=	x
B2:	Fob	=	x
B1:	Xa	=	note1
B0:	Xb	=	note1

note 1:

Xa,Xb

0,1	:	Pal M, Pal N, Ntsc M Pin 34 : 3.58 (1, 2 or 3 crystals) Pin 35 : No crystal
1,0	:	Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1 Pin 34 : No crystal Pin 35 : 4.43 (1 crystal)
1,1	:	Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1, Pal M, Pal N, Ntsc M Pin 34 : 3.58 (1, 2 or 3 crystals) Pin 35 : 4.43 (1 crystal)

Option 1.

B7:	Frf	=	1
B6:	Frs	=	1
B5:	Dl	=	x
B4:	Stb	=	1
B3:	Poc	=	x
B2:	Cm2	=	x
B1:	Cm1	=	x
B0:	Cm0	=	x

Option 2.

B7:	Oso	=	0
B6:	Vsd	=	0
B5:	Cb	=	0
B4:	Bls	=	0
B3:	Bks	=	0
B2:	Ie1	=	x
B1:	Afw	=	x
B0:	Bb	=	0

Option 3.

B7:	Hob	=	note 1
B6:	Bps	=	0
B5:	Acl	=	x
B4:	Cmb	=	note 2
B3:	Ast	=	x
B2:	Cl2	=	1
B1:	Cl1	=	0
B0:	Cl0	=	0

note 1:

0	=	Pal+ helper output blanking disabled
1	=	Pal+ helper output blanking enabled

note 2:

0	=	Comb filter disabled
1	=	Comb filter enabled

Option 4.

B7:	Ifs	=	x
B6:	Mod	=	x
B5:	Vsw	=	x
B4:	Sm	=	x
B3:	Ds	=	0
B2:	Dsa	=	0
B1:	Fav	=	0
B0:	Lfa	=	x

Option 5. CTI Available

B7:	Avl	=	0
B6:	Hbl	=	x
B5:	Vim	=	x
B4:	Gai	=	note 1
B3:	Nci	=	x
B2:	Stm	=	x
B1:	Vid	=	x
B0:	Lbm	=	0

note 1:

0	=	CTI disabled
1	=	CTI available

Option 6.

B7:	Hco	=	x
B6:	Evg	=	1
B5:	Sbl	=	1
B4:	Prd	=	x
B3:	Mat	=	note 1
B2:	Rbl	=	x
B1:	Cor	=	x
B0:	Aen	=	note 2

note 1:

0	=	If only PAL
1	=	Else

note 2:

0	=	APS diasbled >> Preset
1	=	APS enabled >> APS

Option 7. Country Value, PLL_VST, PIP Zoom Mode, PIP Position

B7:	C3	=	note 1
B6:	C2	=	note 1
B5:	C1	=	note 1
B4:	C0	=	note 1
B3:	P/V	=	note 2
B2:	PZM	=	note 3
B1:	PP1	=	note 4
B0:	PP0	=	note 4

note 1:

C3,C2,C1,C0 = Country

0,0,0,0	=	?	Not allowed
0,0,0,1	=	D	Germany
0,0,1,0	=	A	Austria
0,0,1,1	=	CH	Switzerland
0,1,0,0	=	I	Italy
0,1,0,1	=	F	France
0,1,1,0	=	B	Belgium
0,1,1,1	=	DK	Denmark
1,0,0,0	=	S	Sweden
1,0,0,1	=	N	Norway
1,0,1,0	=	SF	Finland
1,0,1,1	=	GB	Great Britain
1,1,0,0	=	NL	Netherlands
1,1,0,1	=	P	Portugal
1,1,1,0	=	E	Spain
1,1,1,1	=	TR	Turkey

note 2:

1	=	VST Tuner
0:	=	PLL Tuner

note 3:

PZM

1:	=	16 : 9
0:	=	4:3

note 4:

PP1, PP0

00:	=	LEFT-TOP
01:	=	LEFT BOTTOM
10:	=	RIGHT-BOTTOM
11:	=	RIGHT-TOP

Option 8. Tube Size, Default Zoom mode, IF Frequency

B7:	Tub	=	note 1
B6:	Z.Def	=	note 2
B5:	IfD	=	note 3
B4:	IfI	=	note 4
B3:	IfM	=	note 5
B2:	Aps	=	note 6
B1:	Hp	=	note 7
B0:	Hue	=	note 8

note 1:

Tub

0	=	16:9 Tube size
1	=	4:3 Tube size

note 2:

Z.Def

0	=	16:9 mode default
1	=	4:3 mode default

note 3:

IfI

0	=	IF I 39.5 MHz	Great Britain I	, Only UHF Tuner
1	=	IF I 38.9 MHz	Ireland I+	, Standard Tuner

note 4:

IfD

0	=	IF DK 38.0 MHz
1	=	IF DK 38.9 MHz

note 5:

IfM

0 = IF M,N 45.75 MHz S&N American Models , Tuner UV1336 (Only Pal M/N, Ntsc M)
1 = IF M,N 38.9 MHz Euro M,N Models , Standard Tuner

Note 6:

Aps (Only for PLL)

0 = A.P.S. done
1 = A.P.S. set

note 7:

Hp

0 = No headphone
1 = Headphone available

note 8:

Hue

0 = No hue
1 = Hue available

Option 9. Standard Available

B7: NM = note 1
B6: PN = note 1
B5: PM = note 1
B4: K1 = note 1
B3: L = note 1
B2: I = note 1
B1: DK = note 1
B0: BG = note 1

note 1:

0 = Standard not supported
1 = Standard available

Option 10. Scart , Combfilter, Teletext Language

B7:	TXL2	=	note 1
B6:	TXL1	=	note 1
B5:	TXL0	=	note 1
B4:	Com	=	note 2
B3:	Svh	=	note 3
B2:	Fro	=	note 4
B1:	Sc2	=	note 5
B0:	Sc1	=	note 6

note 1:

TXL2,TXL1,TXL0:

000	=	WEST, {ENGLISH}, {FRENCH}, {SCAND }, {CZECH }, {GERMAN}, {SPANISH}, {ITALIAN}, {ENGLISH }
001	=	WEST-EAST{POLISH }, {FRENCH}, {SCAND }, {CZECH }, {GERMAN}, {SERBIAN}, {ITALIAN}, {RUMANIAN}
010	=	WEST-TR{ENGLISH}, {FRENCH}, {SCAND }, {TURKISH}, {GERMAN}, {SPANISH}, {ITALIAN}, {GREEK }
011	=	EAST (Cyrillic) {ENGLISH}, {RUSSIAN},{HUNGARIAN},{CZECH }, {GERMAN},{UKRAINIAN},{LETTISH}, {RUMANIAN}
100	=	ARABIC{ENGLISH}, {FRENCH} ,{ENGLISH }, {ENGLISH}, {ENGLISH},{HEBREW}, {ENGLISH}, {ARABIC }
101	=	--
110	=	--
111	=	--

note 2:

0	=	Comb filter not supported
1	=	Comb filter available

note 3:

0	=	S-VHS not supported
1	=	S-VHS available

note 4:

0	=	Front/Back AV (AV-3) not supported
1	=	Front/Back AV (AV-3) available

note 5:

0	=	Scart 2 not supported
1	=	Scart 2 available

note 6:

0	=	Scart 1 not supported
1	=	Scart 1 available

Option 11. Pll tuner control 1 byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 12. Pll tuner control 2 low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 13. Pll tuner control 2 mid byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	0	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 14. Pll tuner control 2 high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 15. Pll tuner VHF LOW - VHF HIGH crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 0 1 0	(0A hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 0 0 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 1 0 1 0	(AA hex)

Option 16. Pll tuner VHF LOW - VHF HIGH crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 1 0 0	(0C hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 1 0 1	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 0 1 0 0 1	(09 hex)

Option 17. Pll tuner VHF HIGH - UHF crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	1 1 1 0 0 0 1 0	(E2 hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	1 0 1 0 0 0 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 0 0 1 0	(A2 hex)

Option 18. Pll tuner VHF HIGH - UHF crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 1 1 1 1 0	(1D hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 1 1 1 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 1 1 0 1 1	(1B hex)

Option 19. PIP Pll tuner control 1 byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 20. PIP Pll tuner control 2 low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 21. PIP Pll tuner control 2 mid byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	0	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 22. PIP Pll tuner control 2 high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 23. PIP Pll tuner VHF LOW - VHF HIGH crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 0 1 0	(0A hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 0 0 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 1 0 1 0	(AA hex)

Option 24. PIP Pll tuner VHF LOW - VHF HIGH crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF LOW - VHF HIGH crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 0 1 1 0 0	(0C hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 0 1 1 0 1	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 0 1 0 0 1	(09 hex)

Option 25. PIP Pll tuner VHF HIGH - UHF crossover low byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover low byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	1 1 1 0 0 0 1 0	(E2 hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	1 0 1 0 0 0 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	1 0 1 0 0 0 1 0	(A2 hex)

Option 26. PIP Pll tuner VHF HIGH - UHF crossover high byte

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

Pll tuner VHF HIGH - UHF crossover high byte

		b7 b6 b5 b4 b3 b2 b1 b0	
Philips	UV1316MK2	0 0 0 1 1 1 1 0	(1D hex)
Alps	TELE9X062A	0 0 0 0 0 0 0 0	
Samsung	TEXX2949PG28A	0 0 0 1 1 1 1 0	
Siel	PT060	0 0 0 0 0 0 0 0	
Temic	5001PH5-3X0003	0 0 0 0 0 0 0 0	
Thomson	CTT5020	0 0 0 1 1 0 1 1	(1B hex)

Option 27. LANGUAGE AVAILABLE 1

B7:	L7	=	DANISH
B6:	L6	=	SWEDISH
B5:	L5	=	ITALIAN
B4:	L4	=	PORTUGUESE
B3:	L3	=	SPANISH
B2:	L2	=	FRENCH
B1:	L1	=	GERMAN
B0:	L0	=	ENGLISH

1: Language available
0: Language not available

Option 28. LANGUAGE AVAILABLE 2

B7:	L15	=	RUSSIA,
B6:	L14	=	BULGARIAN,
B5:	L13	=	RUMANIAN,
B4:	L12	=	CROATIC,
B3:	L11	=	POLISH
B2:	L10	=	CZECH
B1:	L9	=	HUNGARY
B0:	L8	=	TURKEY

1: Language available
0: Language not available

Option 29. LANGUAGE AVAILABLE 3 and Zoom Mode Available

B7:	ZSP	=	SUPER ZOOM MODE
B6:	ZSB	=	SUBTITLE ZOOM MODE
B5:	ZCN	=	CINEMA ZOOM MODE
B4:	b4	=	x
B3:	L19	=	Not used
B2:	L18	=	Not used
B1:	L17	=	ARABIC
B0:	L16	=	HEBREW

1: Available
0: Not available

Option 30. MENU COLOR SELECTION HEADER/BOTTOM BACKGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 0 0	blue

Option 31. MENU COLOR SELECTION HEADER FOREGROUND

B7: b7 = TRANSPARENT
B6: . =
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 1 1	white

Option 32. MENU COLOR SELECTION ITEMS BACKGROUND

B7: b7 = TRANSPARENT
B6: . =
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 1 1 0 0 1 0	cyan

Option 33. MENU COLOR SELECTION ITEMS FOREGROUND

B7: b7 = TRANSPARENT
B6: . =
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 1 0 0 0	black

Option 34. MENU COLOR SELECTION CURSOR BACKGROUND

B7: b7 = TRANSPARENT
B6: . =
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 0 0	blue

Option 35. MENU COLOR SELECTION CURSOR FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 1 1	white

Option 36. MENU COLOR SELECTION BOTTOM FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 1 1 1	white

Option 37. MENU COLOR SELECTION LISTBOX FOREGROUND

B7:	b7	=	TRANSPARENT
B6:	.	=	
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
default	0 0 0 0 0 0 0 1	red

Option 38. TV TELETEXT MODE SELECTION, Child Lock, Standard, Equalizer, Country

B7:	B7	=	x
B6:	C	=	note 6
B5:	LM	=	note 5
B4:	EQ	=	note 4
B3:	St	=	note 3
B2:	CL	=	note 2
B1:	T1	=	note 1
B0:	T0	=	note 1

note 1:

Teletext selection

T1, T0:

0,1 = No TV Text
0,0 = Simple TV Text (One page)
1,0 = Fasttext/Toptext TV Text (Eight pages)

note 2 :

ST = Child Lock

0 = Off
1 = On (Active)

note 3 :

St = Standard available

0 = Standard not available
1 = Standard available

note 4 :

EQ = Equalizer available

0 = Equalizer not available
1 = Equalizer available

note 5 :

EQ = List Mode available

0 = List Mode not available
1 = List Mode available

note 6 :

EQ = Country Line available

0 = Country Line not available
1 = Country Line available

Option 39. PERSONAL PREFERANS EQUALIZER BAND 1

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 1	0	0	0	0	0	1	1	0

Option 40. PERSONAL PREFERANS EQUALIZER BAND 2

B7: b7 = note 1

B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 2	0	0	0	0	0	1	1	0

Option 41. PERSONAL PREFERANS EQUALIZER BAND 3

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 3	0	0	0	0	0	1	1	0

Option 42. PERSONAL PREFERANS EQUALIZER BAND 4

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 4	0	0	0	0	0	1	1	0

Option 43. PERSONAL PREFERANS EQUALIZER BAND 5

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 5	0	0	0	0	0	1	1	0

Option 44. SOUND EFFECT (STANDARD, MUSIC, SPEECH, JAZZ,PP)

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 45. VOLUME OFFSET LEFT

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 46. VOLUME OFFSET RIGHT

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 47. VOLUME OFFSET CENTER

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 48. VOLUME OFFSET REAR

B7: b7 = note 1
B6: b6 = note 1

B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 49. SURROUND DELAY

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

Option 50. FM PRESCALE

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
FM PRESCALE	0 0 0 0 0 1 1 0	(**AVL On**)

Option 51. NICAM PRESCALE

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
NICAM PRESCALE	0 0 0 0 0 1 1 0	(**AVL On**)

Option 52. SCART PRESCALE and AVL Bit

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1

B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
SCART PRESCALE	0 0 0 0 1 1 0 0	(**AVL On**)

Option 53. I2S PRESCALE

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
I2S PRESCALE	0 0 0 0 0 1 1 0	(**AVL On**)

Option 54. MSP SCART OUTPUT VOLUME

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7 b6 b5 b4 b3 b2 b1 b0	
MSP SCART OUTPUT VOLUME	0 0 0 0 0 1 1 0	(**AVL On**)

Option 55. SPEAKER SETUP

B7: b7 = note 1
B6: b6 = note 1
B5: b5 = note 1
B4: b4 = note 1
B3: b3 = note 1
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

b7 b6 b5 b4 b3 b2 b1 b0

SPEAKER SETUP (L/R, L/C/R, L/R/S, L/C/R/S) 0 0 0 0 0 0 0 0 (**AVL On**)

Option 56. AUDIO OPTIONS

B7:	b7	=	x
B6:	b6	=	x
B5:	b5	=	x
B4:	Trs	=	note 1
B3:	Trb	=	note 2
B2:	Bbe	=	note 3
B1:	Spa	=	note 4
B0:	Avl	=	note 5

note 1 :

Trs	=	TruSurround
0	=	TruSurround not available
1	=	TruSurround available

note 2 :

Trb	=	TruBass
0	=	TruBass not available
1	=	TruBass available

note 3 :

Bbe	=	BBE
0	=	BBE not available
1	=	BBE available

note 4 :

Spa	=	Spatial Efect available
0	=	Spatial Efect not available
1	=	Spatial Efect available

note 5 :

Avl	=	Automatic volume level available
0	=	Automatic volume level not available
1	=	Automatic volume level available

Option 57. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 58. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 59. MSP OPTION

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
RESERVED FOR MSP

Option 60. Power Delay Time

B7:	L7	=	note 1
B6:	L6	=	note 1
B5:	L5	=	note 1
B4:	L4	=	note 1
B3:	L3	=	note 1
B2:	L2	=	note 1
B1:	L1	=	note 1
B0:	L0	=	note 1

Note 1:

	L7	L6	L5	L4	L3	L2	L1	L0
Default Value :	0	0	0	0	0	0	1	0

1000 MSEC = 1SN

L7L6L5L4L3L2L1L0		
00000000	=	0 msec
00000001	=	25 msec
00000010	=	50 msec
00000011	=	75 msec
00000100	=	100 msec
00000101	=	125 msec
00000110	=	150 msec
00000111	=	175 msec
00001000	=	200 msec
00001001	=	225 msec
00001010	=	250 msec
00001011	=	275 msec
00001100	=	300 msec

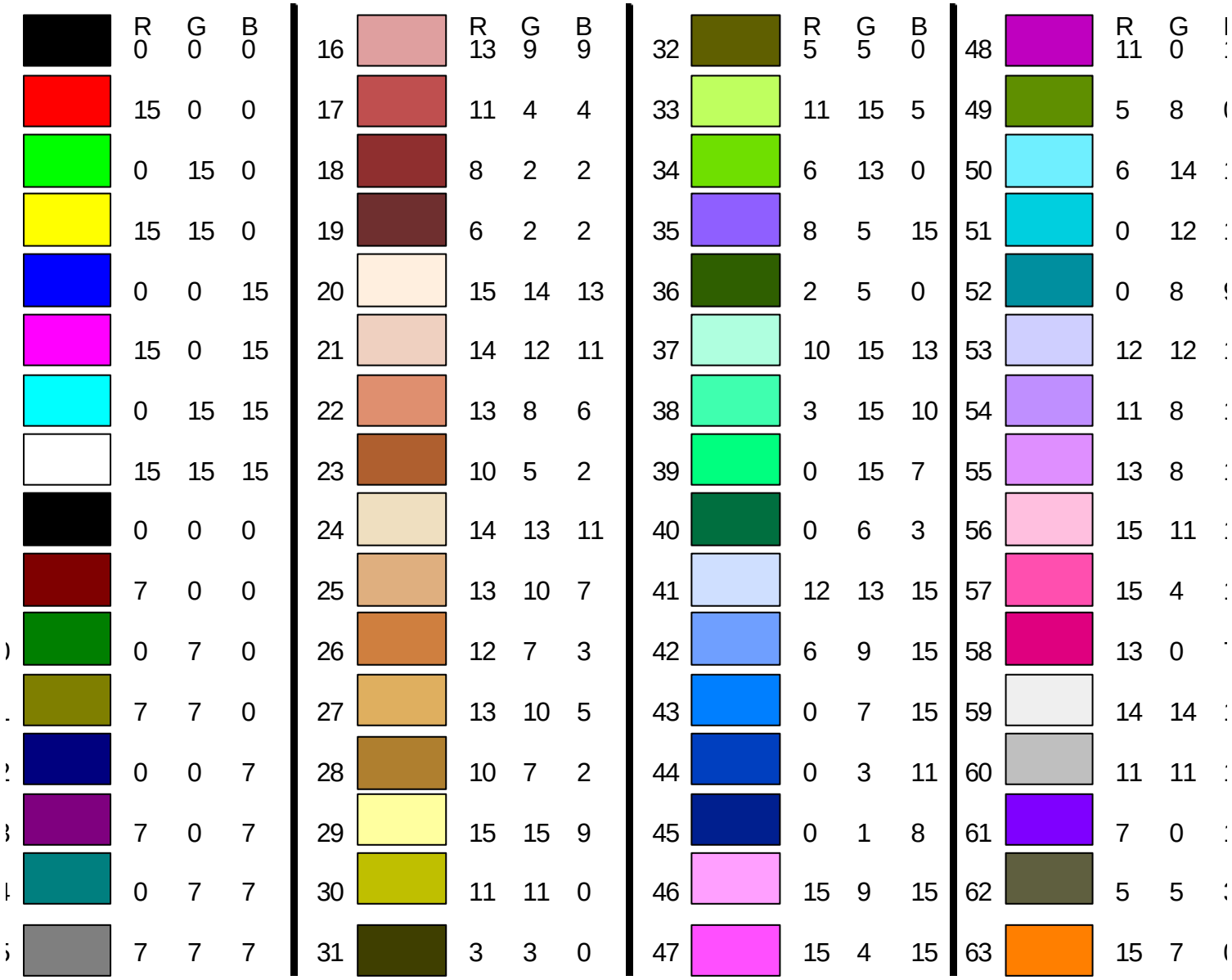
00001101	=	325 msec
00001110	=	350 msec
00001111	=	375 msec
00010000	=	400 msec
00010001	=	425 msec
00010010	=	450 msec
00010011	=	475 msec
00010100	=	500 msec
00010101	=	525 msec
00010110	=	550 msec
00010111	=	575 msec
00011000	=	600 msec
00011001	=	625 msec
00011010	=	650 msec
00011011	=	675 msec
00011100	=	700 msec
00011101	=	725 msec
00011110	=	750 msec
00011111	=	775 msec
00100000	=	800 msec
00100001	=	825 msec
00100010	=	850 msec
00100011	=	875 msec
00100100	=	900 msec
00100101	=	925 msec
00100110	=	950 msec
00100111	=	975 msec
00101000	=	1000 msec
00101001	=	1025 msec
00101010	=	1050 msec
00101011	=	1075 msec
00101100	=	1100 msec
00101101	=	1125 msec
00101110	=	1150 msec
00101111	=	1175 msec
00110000	=	1200 msec
00110001	=	1225 msec
00110010	=	1250 msec
00110011	=	1275 msec
00110100	=	1300 msec
00110101	=	1325 msec
00110110	=	1350 msec
00110111	=	1375 msec
00111000	=	1400 msec
00111001	=	1425 msec
00111010	=	1450 msec
00111011	=	1475 msec
00111100	=	1500 msec
00111101	=	1525 msec
00111110	=	1550 msec
00111111	=	1575 msec
01000000	=	1600 msec
01000001	=	1625 msec
01000010	=	1650 msec
01000011	=	1675 msec
01000100	=	1700 msec
01000101	=	1725 msec
01000110	=	1750 msec
01000111	=	1775 msec
01001000	=	1800 msec

01001001	=	1825 msec
01001010	=	1850 msec
01001011	=	1875 msec
01001100	=	1900 msec
01001101	=	1925 msec
01001110	=	1950 msec
01001111	=	1975 msec
01010000	=	2000 msec
01010001	=	2025 msec
01010010	=	2050 msec
01010011	=	2075 msec
01010100	=	2100 msec
01010101	=	2125 msec
01010110	=	2150 msec
01010111	=	2175 msec
01011000	=	2200 msec
01011001	=	2225 msec
01011010	=	2250 msec
01011011	=	2275 msec
01011100	=	2300 msec
01011101	=	2325 msec
01011110	=	2350 msec
01011111	=	2375 msec
01100000	=	2400 msec
01100001	=	2425 msec
01100010	=	2450 msec
01100011	=	2475 msec
01100100	=	2500 msec
01100101	=	2525 msec
01100110	=	2550 msec
01100111	=	2575 msec
01101000	=	2600 msec
01101001	=	2625 msec
01101010	=	2650 msec
01101011	=	2675 msec
01101100	=	2700 msec
01101101	=	2725 msec
01101110	=	2750 msec
01101111	=	2775 msec
01110000	=	2800 msec
01110001	=	2825 msec
01110010	=	2850 msec
01110011	=	2875 msec
01110100	=	2900 msec
01110101	=	2925 msec
01110110	=	2950 msec
01110111	=	2975 msec
01111000	=	3000 msec
01111001	=	3025 msec
01111010	=	3050 msec
01111011	=	3075 msec
01111100	=	3100 msec
01111101	=	3125 msec
01111110	=	3150 msec
01111111	=	3175 msec
10000000	=	3200 msec
10000001	=	3225 msec
10000010	=	3250 msec
10000011	=	3275 msec
10000100	=	3300 msec

10000101	=	3325 msec
10000110	=	3350 msec
10000111	=	3375 msec
10001000	=	3400 msec
10001001	=	3425 msec
10001010	=	3450 msec
10001011	=	3475 msec
10001100	=	3500 msec
10001101	=	3525 msec
10001110	=	3550 msec
10001111	=	3575 msec
10010000	=	3600 msec
10010001	=	3625 msec
10010010	=	3650 msec
10010011	=	3675 msec
10010100	=	3700 msec
10010101	=	3725 msec
10010110	=	3750 msec
10010111	=	3775 msec
10011000	=	3800 msec
10011001	=	3825 msec
10011010	=	3850 msec
10011011	=	3875 msec
10011100	=	3900 msec
10011101	=	3925 msec
10011110	=	3950 msec
10011111	=	3975 msec
10100000	=	4000 msec
10100001	=	4025 msec
10100010	=	4050 msec
10100011	=	4075 msec
10100100	=	4100 msec
10100101	=	4125 msec
10100110	=	4150 msec
10100111	=	4175 msec
10101000	=	4200 msec
10101001	=	4225 msec
10101010	=	4250 msec
10101011	=	4275 msec
10101100	=	4300 msec
10101101	=	4325 msec
10101110	=	4350 msec
10101111	=	4375 msec
10110000	=	4400 msec
10110001	=	4425 msec
10110010	=	4450 msec
10110011	=	4475 msec
10110100	=	4500 msec
10110101	=	4525 msec
10110110	=	4550 msec
10110111	=	4575 msec
10111000	=	4600 msec
10111001	=	4625 msec
10111010	=	4650 msec
10111011	=	4675 msec
10111100	=	4700 msec
10111101	=	4725 msec
10111110	=	4750 msec
10111111	=	4775 msec
11000000	=	4800 msec

11000001	=	4825 msec
11000010	=	4850 msec
11000011	=	4875 msec
11000100	=	4900 msec
11000101	=	4925 msec
11000110	=	4950 msec
11000111	=	4975 msec
11001000	=	5000 msec
11001001	=	5025 msec
11001010	=	5050 msec
11001011	=	5075 msec
11001100	=	5100 msec
11001101	=	5125 msec
11001110	=	5150 msec
11001111	=	5175 msec
11010000	=	5200 msec
11010001	=	5225 msec
11010010	=	5250 msec
11010011	=	5275 msec
11010100	=	5300 msec
11010101	=	5325 msec
11010110	=	5350 msec
11010111	=	5375 msec
11011000	=	5400 msec
11011001	=	5425 msec
11011010	=	5450 msec
11011011	=	5475 msec
11011100	=	5500 msec
11011101	=	5525 msec
11011110	=	5550 msec
11011111	=	5575 msec
11100000	=	5600 msec
11100001	=	5625 msec
11100010	=	5650 msec
11100011	=	5675 msec
11100100	=	5700 msec
11100101	=	5725 msec
11100110	=	5750 msec
11100111	=	5775 msec
11101000	=	5800 msec
11101001	=	5825 msec
11101010	=	5850 msec
11101011	=	5875 msec
11101100	=	5900 msec
11101101	=	5925 msec
11101110	=	5950 msec
11101111	=	5975 msec
11110000	=	6000 msec
11110001	=	6025 msec
11110010	=	6050 msec
11110011	=	6075 msec
11110100	=	6100 msec
11110101	=	6125 msec
11110110	=	6150 msec
11110111	=	6175 msec
11111000	=	6200 msec
11111001	=	6225 msec
11111010	=	6250 msec
11111011	=	6275 msec
11111100	=	6300 msec

11111101	=	6325 msec
11111110	=	6350 msec
11111111	=	6375 msec


R G B
0 0 0
15 0 0
0 15 0
15 15 0
0 0 15
15 0 15
0 15 15
15 15 15
0 0 0
7 0 0
0 7 0
7 7 0
0 0 7
7 0 7
0 7 7
7 7 7
16 13 9 9
17 11 4 4
18 8 2 2
19 6 2 2
20 15 14 13
21 14 12 11
22 13 8 6
23 10 5 2
24 14 13 11
25 13 10 7
26 12 7 3
27 13 10 5
28 10 7 2
29 15 15 9
30 11 11 0
31 3 3 0
32 5 5 0
33 11 15 5
34 6 13 0
35 8 5 15
36 2 5 0
37 10 15 13
38 3 15 10
39 0 15 7
40 0 6 3
41 12 13 15
42 6 9 15
43 0 7 15
44 0 3 11
45 0 1 8
46 15 9 15
47 15 4 15
48 11 0
49 5 8
50 6 14
51 0 12
52 0 8
53 12 12
54 11 8
55 13 8
56 15 11
57 15 4
58 13 0
59 14 14
60 11 11
61 7 0
62 5 5
63 15 7

	76543210
0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111
16	00010000
17	00010001
18	00010010
19	00010011
20	00010100
21	00010101
22	00010110
23	00010111
24	00011000
25	00011001
26	00011010
27	00011011
28	00011100
29	00011101
30	00011110
31	00011111

Bit Positions

Colour Code

	76543210
32	00100000
33	00100001
34	00100010
35	00100011
36	00100100
37	00100101
38	00100110
39	00100111
40	00101000
41	00101001
42	00101010
43	00101011
44	00101100
45	00101101
46	00101110
47	00101111
48	00110000
49	00110001
50	00110010
51	00110011
52	00110100
53	00110101
54	00110110
55	00110111
56	00111000
57	00111001
58	00111010
59	00111011
60	00111100
61	00111101
62	00111110
63	00111111

FINISHED OPTION TABLE

Option 61. DUAL LIMIT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Dual Identification Limit related to reading DFP Register 0018h –Stereo Detection Register of MSP 34xxD in German dual transmissions.

	b7 b6 b5 b4 b3 b2 b1 b0	
DUAL LIMIT	0 0 0 1 0 0 1 0	(**AVL On and Off**)

Option 62. STEREO LIMIT

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Stereo Identification Limit related to reading DFP Register 0018h – Stereo Detection Register of MSP34xxD in German Stereo Transmissions.

	b7 b6 b5 b4 b3 b2 b1 b0	
STEREO LIMIT	1 1 1 1 0 0 0 0	(**AVL ON and Off**)

Option 63. AUTO SWITCH THRESHOLD

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Auto FM_AM : FP Register 21h Automatic switching with external threshold
B2, B1, B0 : Bit10, Bit9,Bit8 of the register
B7, B6, B5, B4,B3 : Bit7,Bit6, Bit5, Bit4, Bit3 of the register
(Bit2,Bit1 of the register is always 0 and Bit0 of the register is always 1.)

	b7 b6 b5 b4 b3 b2 b1 b0	
AUTO SWITCH THRESHOLD	0 1 0 0 0 0 1 1	(**AVL On and off, Threshold 800**)
	0 1 ???	

Option 64. DFP ADDRESS

B7:	b7	=	note 1
B6:	b6	=	note 1
B5:	b5	=	note 1
B4:	b4	=	note 1
B3:	b3	=	note 1
B2:	b2	=	note 1
B1:	b1	=	note 1
B0:	b0	=	note 1

note 1 :
Write to any of the DFP Registers when the power is on: If this byte or option is zero, you do not use this option.
If you input a number to this option, you write the following bytes to the register addressed by that number.

	b7 b6 b5 b4 b3 b2 b1 b0	
DFP ADDRESS	0 0 0 0 0 0 0 0	(Under normal conditions)

ADJUST 00-65

ADJUST 00	=	White Point RED
ADJUST 01	=	White Point GREEN
ADJUST 02	=	White Point BLUE
ADJUST 03	=	AGC
ADJUST 04	=	IF-PLL Negative
ADJUST 05	=	IF-PLL Positive
ADJUST 06	=	Y-Delay PAL
ADJUST 07	=	Y-Delay SECAM
ADJUST 08	=	Y-Delay NTSC
ADJUST 09	=	Y-Delay OTHER
ADJUST 10	=	4:3 Vertical Zoom
ADJUST 11	=	4:3 Vertical Scroll
ADJUST 12	=	4:3 Horizontal Shift
ADJUST 13	=	4:3 Vertical Slope
ADJUST 14	=	4:3 Vertical Amplitude
ADJUST 15	=	4:3 S-correction
ADJUST 16	=	4:3 Vertical Shift
ADJUST 17	=	4:3 EW Width
ADJUST 18	=	4:3 EW Parabola Width
ADJUST 19	=	4:3 EW Corner Parabola
ADJUST 20	=	4:3 EW Trapezium
ADJUST 21	=	16:9 Vertical Zoom
ADJUST 22	=	16:9 Vertical Scroll
ADJUST 23	=	16:9 Horizontal Shift
ADJUST 24	=	16:9 Vertical Slope
ADJUST 25	=	16:9 Vertical Amplitude
ADJUST 26	=	16:9 S-correction
ADJUST 27	=	16:9 Vertical Shift
ADJUST 28	=	16:9 EW Width
ADJUST 29	=	16:9 EW Parabola Width
ADJUST 30	=	16:9 EW Corner Parabola
ADJUST 31	=	16:9 EW Trapezium
ADJUST 32	=	Subtitle Vertical Zoom
ADJUST 33	=	Subtitle Vertical Scroll
ADJUST 34	=	Subtitle Horizontal Shift
ADJUST 35	=	Subtitle Vertical Slope
ADJUST 36	=	Subtitle Vertical Amplitude
ADJUST 37	=	Subtitle S-correction
ADJUST 38	=	Subtitle Vertical Shift
ADJUST 39	=	Subtitle EW Width
ADJUST 40	=	Subtitle EW Parabola Width
ADJUST 41	=	Subtitle EW Corner Parabola
ADJUST 42	=	Subtitle EW Trapezium
ADJUST 43	=	Super Zoom Vertical Zoom
ADJUST 44	=	Super Zoom Vertical Scroll
ADJUST 45	=	Super Zoom Horizontal Shift
ADJUST 46	=	Super Zoom Vertical Slope
ADJUST 47	=	Super Zoom Vertical Amplitude
ADJUST 48	=	Super Zoom S-correction
ADJUST 49	=	Super Zoom Vertical Shift
ADJUST 50	=	Super Zoom EW Width

ADJUST 51	=	Super Zoom EW Parabola Width
ADJUST 52	=	Super Zoom EW Corner Parabola
ADJUST 53	=	Super Zoom EW Trapezium
ADJUST 54	=	Cinema Vertical Zoom
ADJUST 55	=	Cinema Vertical Scroll
ADJUST 56	=	Cinema Horizontal Shift
ADJUST 57	=	Cinema Vertical Slope
ADJUST 58	=	Cinema Vertical Amplitude
ADJUST 59	=	Cinema S-correction
ADJUST 60	=	Cinema Vertical Shift
ADJUST 61	=	Cinema EW Width
ADJUST 62	=	Cinema EW Parabola Width
ADJUST 63	=	Cinema EW Corner Parabola
ADJUST 64	=	Cinema EW Trapezium
ADJUST 65	=	OSD position

	CRN	Part No.	Description
	C01	VS30000332	CAP SMD 4.7NF 50V K (0805)
	C02	VS30000332	CAP SMD 4.7NF 50V K (0805)
	C029	VS30000294	CAP SMD 100NF 50V K (0805)
	C030	VS30000294	CAP SMD 100NF 50V K (0805)
	C031	VS30000294	CAP SMD 100NF 50V K (0805)
	C032	VS30000294	CAP SMD 100NF 50V K (0805)
	C056	VS30000109	CAP MKT 470NF 63V J
	C057	VS30000109	CAP MKT 470NF 63V J
	C059	VS30000300	CAP SMD 1.5NF 50V K 0805
	C060	VS30000300	CAP SMD 1.5NF 50V K 0805
	C061	VS30000242	CAP SMD 330PF 50V J 0805
	C062	VS30000242	CAP SMD 330PF 50V J 0805
	C074	VS30000371	CAP EL 22UF 50V M
	C077	VS30000242	CAP SMD 330PF 50V J 0805
	C095	VS30000289	CAP SMD 10NF 50V K R (0805)
	C102	VS30000345	CAP EL 10UF 50V M
	C107	VS30000300	CAP SMD 1.5NF 50V K 0805
	C108	VS30000312	CAP SMD 22NF 50V K (0805)
	C109	VS30000332	CAP SMD 4.7NF 50V K (0805)
	C111	VS30000332	CAP SMD 4.7NF 50V K (0805)
	C112	VS30000109	CAP MKT 470NF 63V J
	C116	VS30000082	CAP MKT 15NF 63V J
	C117	VS30000082	CAP MKT 15NF 63V J
	C201	VS30000352	CAP EL 100UF 16V M
	C202	VS30000074	CAP MKT 100NF 63V J
	C203	VS30000345	CAP EL 10UF 50V M
	C205	VS30000294	CAP SMD 100NF 50V K (0805)
	C206	VS30000294	CAP SMD 100NF 50V K (0805)
	C207	VS30000294	CAP SMD 100NF 50V K (0805)
	C208	VS30000345	CAP EL 10UF 50V M
	C209	VS30000345	CAP EL 10UF 50V M
	C210	VS30000345	CAP EL 10UF 50V M
	C211	VS30000294	CAP SMD 100NF 50V K (0805)
	C212	VS30000191	CAP CER 100PF 50V J SL
	C401	VS30000384	CAP EL 2.2UF 50V M
	C402	VS30000345	CAP EL 10UF 50V M
	C403	VS30000074	CAP MKT 100NF 63V J
	C404	VS30000268	CAP SMD 68PF 50V J (0805)
	C405	VS30000345	CAP EL 10UF 50V M
	C406	VS30000313	CAP CER 22NF 50V Z F
	C407	VS30000384	CAP EL 2.2UF 50V M
	C409	VS30000294	CAP SMD 100NF 50V K (0805)
	C410	VS30000345	CAP EL 10UF 50V M
	C411	VS30000334	CAP SMD 47NF 50V K (0805)
	C412	VS30000312	CAP SMD 22NF 50V K (0805)
	C413	VS30000375	CAP EL 220UF 16V M
	C416	VS30000312	CAP SMD 22NF 50V K (0805)
	C417	VS30000312	CAP SMD 22NF 50V K (0805)
	C418	VS30000312	CAP SMD 22NF 50V K (0805)
	C419	VS30000315	CAP SMD 220NF 25V Z (0805)
	C421	VS30000220	CAP SMD 22PF 50V J (0805)
	C422	VS30000220	CAP SMD 22PF 50V J (0805)
	C423	VS30000322	CAP SMD 3.3NF 50V K (0805)
	C424	VS30000294	CAP SMD 100NF 50V K (0805)
	C425	VS30000312	CAP SMD 22NF 50V K (0805)
	C426	VS30000353	CAP EL 100UF 25V M
	C427	VS30000294	CAP SMD 100NF 50V K (0805)
	C428	VS30000345	CAP EL 10UF 50V M
	C430	VS30000309	CAP SMD 2.2NF 50V K R 0805
	C431	VS30000362	CAP EL 1UF 50V M
	C432	VS30000413	CAP EL 4.7UF 50V M

	CRN	Part No.	Description
	C433	VS30000284	CAP SMD 1NF 50V K R (0805)
	C434	VS30000284	CAP SMD 1NF 50V K R (0805)
	C435	VS30000074	CAP MKT 100NF 63V J
	C436	VS30000074	CAP MKT 100NF 63V J
	C437	VS30000362	CAP EL 1UF 50V M
	C438	VS30000312	CAP SMD 22NF 50V K (0805)
	C439	VS30000284	CAP SMD 1NF 50V K R (0805)
	C440	VS30000345	CAP EL 10UF 50V M
	C446	VS30000252	CAP SMD 47PF 50V J (0805)
	C447	VS30000252	CAP SMD 47PF 50V J (0805)
	C448	VS30000189	CAP SMD 100PF 50V J (0805)
	C450	VS30000294	CAP SMD 100NF 50V K (0805)
	C459	VS30000332	CAP SMD 4.7NF 50V K (0805)
	C465	VS30000300	CAP SMD 1.5NF 50V K 0805
	C490	VS30000284	CAP SMD 1NF 50V K R (0805)
	C497	VS30000300	CAP SMD 1.5NF 50V K 0805
	C498	VS30000189	CAP SMD 100PF 50V J (0805)
	C499	VS30000300	CAP SMD 1.5NF 50V K 0805
	C500	VS30000393	CAP EL 3.3UF 50V M
	C501	VS30000189	CAP SMD 100PF 50V J (0805)
	C502	VS30000074	CAP MKT 100NF 63V J
	C503	VS30000074	CAP MKT 100NF 63V J
	C504	VS30000294	CAP SMD 100NF 50V K (0805)
	C505	VS30000294	CAP SMD 100NF 50V K (0805)
	C513	VS30000294	CAP SMD 100NF 50V K (0805)
	C514	VS30000345	CAP EL 10UF 50V M
	C516	VS30000371	CAP EL 22UF 50V M
	C517	VS30000352	CAP EL 100UF 16V M
	C521	VS30000109	CAP MKT 470NF 63V J
	C524	VS30000237	CAP SMD 33PF 50V J (0805)
	C525	VS30000237	CAP SMD 33PF 50V J (0805)
	C526	VS30000294	CAP SMD 100NF 50V K (0805)
	C530	VS30000294	CAP SMD 100NF 50V K (0805)
	C531	VS30000294	CAP SMD 100NF 50V K (0805)
	C532	VS30000294	CAP SMD 100NF 50V K (0805)
	C533	VS30000294	CAP SMD 100NF 50V K (0805)
	C537	VS30000294	CAP SMD 100NF 50V K (0805)
	C538	VS30000294	CAP SMD 100NF 50V K (0805)
	C570	VS30000371	CAP EL 22UF 50V M
	C571	VS30000371	CAP EL 22UF 50V M
	C572	VS30000371	CAP EL 22UF 50V M
	C573	VS30000371	CAP EL 22UF 50V M
	C575	VS30000252	CAP SMD 47PF 50V J (0805)
	C576	VS30000201	CAP SMD 15PF 50V J (0805)
	C577	VS30000201	CAP SMD 15PF 50V J (0805)
	C580	VS30000387	CAP EL 33UF 50V M
	C583	VS30000294	CAP SMD 100NF 50V K (0805)
	C590	VS30000294	CAP SMD 100NF 50V K (0805)
	C596	VS30000289	CAP SMD 10NF 50V K R (0805)
	C597	VS30000289	CAP SMD 10NF 50V K R (0805)
	C598	VS30000289	CAP SMD 10NF 50V K R (0805)
	C599	VS30000334	CAP SMD 47NF 50V K (0805)
	C601	VS30000355	CAP EL 100UF 50V M
	C603	VS30000309	CAP SMD 2.2NF 50V K R 0805
	C604	VS30000107	CAP MKT 47NF 250V J
	C605	VS30000075	CAP MKT 100NF 250V K (DC)
	C606	VS30000388	CAP EL 33UF 160V M
	C607	VS30000407	CAP EL 470UF 16V M
	C608	VS30000323	CAP CER 33NF 50V K B
	C610	VS30000131	CAP MKP 100NF 250V J
	C611	VS30000174	CAP MKP 7.5NF 1.6KV 3.5%

	CRN	Part No.	Description
	C612	VS30000356	CAP EL 100UF 63V M
	C617	VS30000156	CAP MKP 430NF 250V J
	C618	VS30000394	CAP EL 3.3UF 160V M
	C632	VS30000360	CAP EL 1000UF 25V M
	C660	VS30009208	CAP CER 470PF 1KV K (PULSE)
	C661	VS30009208	CAP CER 470PF 1KV K (PULSE)
	C700	VS30000191	CAP CER 100PF 50V J SL
	C702	VS30000356	CAP EL 100UF 63V M
	C704	VS30000402	CAP EL 47UF 100V M
	C705	VS30000071	CAP MKT 10NF 63V J
	C706	VS30000092	CAP MKT 220NF 63V J
	C707	VS30000090	CAP MKT 22NF 100V J
	C708	VS30000284	CAP SMD 1NF 50V K R (0805)
	C709	VS30000074	CAP MKT 100NF 63V J
	C715	VS30000284	CAP SMD 1NF 50V K R (0805)
⚠	C801	VS30000084	CAP MKT 150NF 275V M AC P=15
⚠	C802	VS30000084	CAP MKT 150NF 275V M AC P=15
	C803	VS30000189	CAP SMD 100PF 50V J (0805)
	C804	VS30000420	CAP EL 150UF 400V M
	C806	VS30000342	CAP CER 820PF 50V K B
	C807	VS30000074	CAP MKT 100NF 63V J
	C808	VS30000284	CAP SMD 1NF 50V K R (0805)
	C809	VS30000284	CAP SMD 1NF 50V K R (0805)
	C811	VS30000161	CAP MKP 47NF 630V J
	C813	VS30000411	CAP EL 4700UF 16V M
	C814	VS30000294	CAP SMD 100NF 50V K (0805)
	C816	VS30000295	CAP CER 100NF 50V Z F
	C817	VS30000359	CAP EL 1000UF 16V M
	C819	VS30000295	CAP CER 100NF 50V Z F
	C821	VS30013533	CAP CER 100PF 1KV K (PULSE)
	C822	VS30000295	CAP CER 100NF 50V Z F
	C823	VS30000383	CAP EL 2200UF 25V M
	C824	VS30013533	CAP CER 100PF 1KV K (PULSE)
	C825	VS30000295	CAP CER 100NF 50V Z F
	C826	VS30000383	CAP EL 2200UF 25V M
	C827	VS30013533	CAP CER 100PF 1KV K (PULSE)
	C828	VS30000359	CAP EL 1000UF 16V M
	C829	VS30000404	CAP EL 47UF 160V M (HR)
	C830	VS30000295	CAP CER 100NF 50V Z F
	C831	VS30000198	CAP CER 120PF 500V J SL
	C832	VS30000294	CAP SMD 100NF 50V K (0805)
	C833	VS30007308	CAP CER 220PF 1KV K (PULSE)
	C845	VS30000375	CAP EL 220UF 16V M
	C846	VS30000433	CAP CER 1NF 1KV M B
	C847	VS30000375	CAP EL 220UF 16V M
	C848	VS30000353	CAP EL 100UF 25V M
	C850	VS30000433	CAP CER 1NF 1KV M B
	C851	VS30000433	CAP CER 1NF 1KV M B
	C852	VS30000433	CAP CER 1NF 1KV M B
	C853	VS30000289	CAP SMD 10NF 50V K R (0805)
	C854	VS30008805	CAP MKT 39NF 63V J
	C855	VS30000284	CAP SMD 1NF 50V K R (0805)
⚠	C860	VS30000447	CAP CER 4.7NF 4KV M E
	C890	VS30000396	CAP EL 47UF 16V M
	C891	VS30000335	CAP CER 47NF 50V Z F
	C892	VS30000295	CAP CER 100NF 50V Z F
	C901	VS30000075	CAP MKT 100NF 250V K (DC)
	C902	VS30000350	CAP EL 10UF 250V M
	C903	VS30000434	CAP CER 1NF 2KV K B
	C904	VS30000319	CAP CER 2.7NF 500V K B
	CAB111	VS30009829	CABLE 1P R2.6 (8CM)

	CRN	Part No.	Description
	CAB200	VS30009850	CABLE 1P R2.6 (6CM)
	CAB212	VS30009085	CABLE 1P R2.6 35 W/CLIPS
	CAB433	VS30009849	CABLE 0.6MM BLUE (7CM)
	CAB700	VS30009851	CABLE 1P R2.6 (35CM)
	CAB820	VS30009846	CABLE 0.6MM BLUE (4CM)
	D100	VS30001284	DIODE 1N4148
	D201	VS30001284	DIODE 1N4148
	D408	VS30001347	DIODE ZENER 8.2V
	D420	VS30001284	DIODE 1N4148
	D500	VS30012412	DIODE ZENER 2.4V SMD
	D503	VS30001284	DIODE 1N4148
	D504	VS30001284	DIODE 1N4148
	D505	VS30012412	DIODE ZENER 2.4V SMD
	D509	VS30001284	DIODE 1N4148
	D520	VS30001284	DIODE 1N4148
	D521	VS30001284	DIODE 1N4148
	D522	VS30001284	DIODE 1N4148
	D583	VS30001284	DIODE 1N4148
	D601	VS30001318	DIODE BA159
	D602	VS30001284	DIODE 1N4148
	D603	VS30001284	DIODE 1N4148
	D604	VS30001377	DIODE ZENER 33V UZT 33B
	D605	VS30001318	DIODE BA159
	D606	VS30001318	DIODE BA159
	D607	VS30001284	DIODE 1N4148
	D608	VS30001284	DIODE 1N4148
	D609	VS30001318	DIODE BA159
	D701	VS30001284	DIODE 1N4148
	D801	VS30001329	DIODE 1N4007
	D802	VS30001329	DIODE 1N4007
	D803	VS30001329	DIODE 1N4007
	D804	VS30001329	DIODE 1N4007
	D805	VS30001318	DIODE BA159
	D807	VS30001318	DIODE BA159
	D811	VS30001315	DIODE BYD33D
	D812	VS30001315	DIODE BYD33D
	D813	VS30001288	DIODE BYV27-200
	D814	VS30001307	DIODE BYW95A
	D815	VS30001307	DIODE BYW95A
	D816	VS30007681	DIODE UF5407
	D818	VS30001318	DIODE BA159
	D819	VS30001349	DIODE ZENER 11V
	D823	VS30001284	DIODE 1N4148
	D826	VS30001318	DIODE BA159
	D827	VS30001318	DIODE BA159
	D858	VS30001371	DIODE ZENER 5.1V ZPD
	D864	VS30001285	DIODE 1N4148 SMD
	D900	VS30001347	DIODE ZENER 8.2V
⚠	F801	VS20000848	FUSE ASSY.TK79-A (2.5A)
	F801	VS30001731	FUSE 2.5A 250V 5*20MM
	F801	VS35000136	FUSE HOLDER TK79-A (GRAY)
	IC100	VS30001524	IC TDA2614
	IC401	VS30001575	IC TDA8842/N2
	IC501	VS30015255	IC SDA5555 HITACHI
	IC502	VS20063994	IC 24C08 WP 3.3V Program. UK (C2142N,C2842N/S)
	IC502	VS20058672	IC 24C08 WP 3.3V Program. UK (C2125S/T)
	IC502	VS20058678	IC 24C08 J19¥251100200A10 (CL2125S/T)
	IC502	VS20064874	IC 24C08 K57?521100202F10 (C2142S)
	IC502	VS20063997	IC 24C08 K43¥552100102F10 (CL2842AN/S)
	IC502	VS20046722	IC 24C08 D93T521100202C00 (CP2025T)
	IC502	VS20058618	IC 24C08 J11¥211100200A10 (CP2125S/T)
	IC502	VS20059188	IC 24C08 J28¥511100102F10 (CP2142AN/S)
	IC502	VS20058730	IC 24C08 J17¥512100102F10 (CP2842AN/S)
	IC701	VS30001561	IC TDA8356
⚠	IC801	VS30007069	IC TCDT1102G
	IC802	VS30001499	IC MC44604P
	IC804	VS30001668	IC LM317T

	CRN	Part No.	Description
	IC805	VS30001500	IC LM7808
	IC807	VS30001622	IC 7805 (1A)
	IC901	VS30008721	IC TDA6108
	J129	VS30001997	FIXED COIL 33UH Q60 J
	J500	VS30010964	FERRITE BEAT(805) BLM21A601RPT
	J649	VS30002016	FIXED COIL 150UH Q60 K
	J810	VS20051395	MD.ASY.PR19Y-11PR19Y(PROTECTION CIR.)90°
	L001	VS30002016	FIXED COIL 150UH Q60 K
	L002	VS30010964	FERRITE BEAT(805) BLM21A601RPT
	L01	VS30001996	FIXED COIL 22UH Q40 K
	L02	VS30001996	FIXED COIL 22UH Q40 K
	L050	VS30002015	FIXED COIL 150UH Q50 K (RAD)
	L201	VS30001979	FIXED COIL 1UH Q45 M-A
	L401	VS30001986	FIXED COIL 3.3UH Q65 K
	L402	VS30001986	FIXED COIL 3.3UH Q65 K
	L403	VS30001990	FIXED COIL 6.8UH Q75 K
	L405	VS30001992	FIXED COIL 10UH Q65 K-A
	L406	VS30001992	FIXED COIL 10UH Q65 K-A
	L502	VS30001992	FIXED COIL 10UH Q65 K-A
	L504	VS30001992	FIXED COIL 10UH Q65 K-A
	L505	VS30001992	FIXED COIL 10UH Q65 K-A
	L506	VS30001992	FIXED COIL 10UH Q65 K-A
	L515	VS30001992	FIXED COIL 10UH Q65 K-A
	L603	VS30002149	LINEARITY COIL 50UH (06-06A)
	L605	VS30001999	FIXED COIL 40UH (LOSS COIL)
	L801	VS30001984	FIXED COIL 2.2UH Q55 M-AX
	L803	VS30002011	COIL CHOKE 150UH 0.82A RAD
	LD501	VS30001279	LED RED/GREEN LTL293SJ
	MD501	VS30001670	PREAMPLIFIER TFMS5360
	PL050	VS30001783	CONN.MALE 5P (2005)
	PL055	VS30001831	CONN MALE 2P TOP RED
	PL056	VS30001830	CONN MALE 2P TOP BLUE
	PL100	VS30001762	CONN.MALE 2P (2052) GRAY
	PL1201	VS30001833	CONN MALE 2P SIDE BLUE
	PL1202	VS30001834	CONN MALE 2P SIDE RED
	PL1203	VS30001884	RCA JACK 1P YELLOW
	PL1204	VS30001882	RCA JACK 1P WHITE
	PL1205	VS30001883	RCA JACK 1P RED
	PL520	VS30001830	CONN MALE 2P TOP BLUE
	PL601	VS30001827	HRZ VRT CONN.(4P)
	PL602	VS20071116	CABLE ASSY.19-5/45 FC RGB W/BLACK CON.
	PL801	VS30001792	CONN.MALE 2P MOLEX
	PL802	VS30001795	CONN.MALE 3P (DEG)
	PL890	VS30002249	CONN ASSY 2/28 SHL.D.C. BLU
	PL890	VS30001830	CONN MALE 2P TOP BLUE
	PL892	VS30007118	PIN F 2P/7.5MM
	PL893	VS30007118	PIN F 2P/7.5MM
⚠	PL900	VS30015752	SOCKET CRT NARROWNECK W/GND HITACHI
	PL901	VS30001783	CONN.MALE 5P (2005)
	PL902	VS30015629	CONN.MALE 5P (2005) BLACK
	PL903	VS35000135	TEST PIN 1.1MM
	PL903	VS35000176	EYELET BR 2*3MM
	PL904	VS35000176	EYELET BR 2*3MM
	PL904	VS30002170	COIL FTZ/RAD
	Q051	VS30001454	TR BC548B
	Q052	VS30001454	TR BC548B
	Q057	VS30001454	TR BC548B
	Q100	VS30001454	TR BC548B
	Q401	VS30001454	TR BC548B
	Q402	VS30001454	TR BC548B
	Q406	VS30001454	TR BC548B
	Q407	VS30001454	TR BC548B

	CRN	Part No.	Description
	Q415	VS30001454	TR BC548B
	Q420	VS30001454	TR BC548B
	Q500	VS30001454	TR BC548B
	Q501	VS30001423	TR BF240
	Q502	VS30001455	TR BC558B
	Q503	VS30001455	TR BC558B
	Q504	VS30001455	TR BC558B
	Q505	VS30001454	TR BC548B
	Q506	VS30001454	TR BC548B
	Q508	VS30001455	TR BC558B
	Q510	VS30001455	TR BC558B
	Q512	VS30001455	TR BC558B
	Q514	VS30001454	TR BC548B
	Q515	VS30001454	TR BC548B
	Q516	VS30001454	TR BC548B
	Q517	VS30001454	TR BC548B
	Q518	VS30001454	TR BC548B
	Q601	VS30001455	TR BC558B
	Q604	VS30001435	TR BC639
	Q605	VS30001440	TR 2506DF
	Q701	VS30001455	TR BC558B
	Q702	VS30001454	TR BC548B
	Q802	VS30001385	TR MTP3N60E (PLASTIC)
	Q802	VS20000959	HE.ASY.19-SMPS 90° 170-270V (PLASTIK)
	Q805	VS30001454	TR BC548B
	Q806	VS30001454	TR BC548B
	Q807	VS30001454	TR BC548B
	Q809	VS30001506	IC TL431
	Q810	VS30001384	TR MCR22-6
	Q890	VS30001428	TR BF423
	R01	VS30000743	RES CF 1/2W 560R J
	R02	VS30000743	RES CF 1/2W 560R J
	R03	VS30000712	RES CF 1/4W 470R J
	R04	VS30000712	RES CF 1/4W 470R J
	R055	VS30000597	RES SMD 1/10W 22K J
	R056	VS30000692	RES SMD 1/10W 3.9K J 0805
	R057	VS30000727	RES SMD 1/10W 47K J (0805)
	R058	VS30000597	RES SMD 1/10W 22K J
	R059	VS30000692	RES SMD 1/10W 3.9K J 0805
	R060	VS30000727	RES SMD 1/10W 47K J (0805)
	R064	VS30000469	RES SMD 1/10W 1K J 0805
	R067	VS30000469	RES SMD 1/10W 1K J 0805
	R068	VS30000774	RES SMD 1/10W 680R J (0805)
	R069	VS30000469	RES SMD 1/10W 1K J 0805
	R070	VS30000588	RES SMD 1/10W 220R J 0805
	R071	VS30000588	RES SMD 1/10W 220R J 0805
	R072	VS30000588	RES SMD 1/10W 220R J 0805
	R073	VS30000797	RES SMD 1/10W 75R J (0805)
	R074	VS30000797	RES SMD 1/10W 75R J (0805)
	R075	VS30000653	RES SMD 1/10W 33R J
	R086	VS30000475	RES SMD 1/10W 10K J 0805
	R092	VS30000466	RES CF 1/4W 1K J
	R100	VS30000727	RES SMD 1/10W 47K J (0805)
	R101	VS30000471	RES CF 1/4W 10K J
	R102	VS30000747	RES SMD 1/10W 560R J (0805)
	R103	VS30000710	RES SMD 1/10W 47R J (0805)
	R104	VS30000457	RES SMD 1/10W 10R J 0805
	R106	VS30000727	RES SMD 1/10W 47K J (0805)
	R107	VS30000480	RES SMD 1/10W 100K J (0805)
	R200	VS30000503	RES SMD 1/10W 12K J (0805)
	R201	VS30000723	RES CF 1/4W 47K J

	CRN	Part No.	Description
	R202	VS30000459	RES CF 1/4W 100R J
	R203	VS30000471	RES CF 1/4W 10K J
	R204	VS30000459	RES CF 1/4W 100R J
	R205	VS30000459	RES CF 1/4W 100R J
	R212	VS30000727	RES SMD 1/10W 47K J (0805)
	R400	VS30000717	RES SMD 1/10W 470R J (0805)
	R401	VS30000717	RES SMD 1/10W 470R J (0805)
	R402	VS30000706	RES CF 1/4W 47R J
	R403	VS30000659	RES SMD 1/10W 330R J (0805)
	R404	VS30000688	RES SMD 1/10W 390R J (0805)
	R405	VS30000469	RES SMD 1/10W 1K J 0805
	R407	VS30000459	RES CF 1/4W 100R J
	R417	VS30000797	RES SMD 1/10W 75R J (0805)
	R418	VS30000735	RES SMD 1/10W 4.7R J (0805)
	R419	VS30000710	RES SMD 1/10W 47R J (0805)
	R420	VS30000593	RES SMD 1/10W 2.2K J (0805)
	R421	VS30000499	RES SMD 1/10W 1.2K J (0805)
	R422	VS30000710	RES SMD 1/10W 47R J (0805)
	R426	VS30000659	RES SMD 1/10W 330R J (0805)
	R428	VS30000650	RES CF 1/4W 33R J
	R429	VS30000524	RES SMD 1/10W 150R J (0805)
	R431	VS30000459	RES CF 1/4W 100R J
	R432	VS30000459	RES CF 1/4W 100R J
	R433	VS30000475	RES SMD 1/10W 10K J 0805
	R437	VS30000469	RES SMD 1/10W 1K J 0805
	R438	VS30000499	RES SMD 1/10W 1.2K J (0805)
	R439	VS30000499	RES SMD 1/10W 1.2K J (0805)
	R440	VS30000499	RES SMD 1/10W 1.2K J (0805)
	R441	VS30000469	RES SMD 1/10W 1K J 0805
	R446	VS30000480	RES SMD 1/10W 100K J (0805)
	R447	VS30000464	RES SMD 1/10W 100R J
	R448	VS30000466	RES CF 1/4W 1K J
	R449	VS30000489	RES SMD 1/10W 1R J (0805)
	R450	VS30000631	RES SMD 1/10W 2.7K J 0805
	R451	VS30000633	RES CF 1/4W 27K J
	R454	VS30000534	RES SMD 1/10W 15K J (0805)
	R456	VS30000550	RES SMD 1/10W 160K J
	R457	VS30000606	RES SMD 1/10W 2.2M J
	R458	VS30000732	RES SMD 1/10W 470K J
	R459	VS30000697	RES SMD 1/10W 39K G
	R460	VS30000770	RES CF 1/4W 680R J
	R461	VS30000499	RES SMD 1/10W 1.2K J (0805)
	R462	VS30000778	RES SMD 1/10W 6.8K J 0805
	R463	VS30000563	RES SMD 1/10W 1.8K J (0805)
	R465	VS30006658	RES SMD 1/10W 82R J
	R485	VS30000727	RES SMD 1/10W 47K J (0805)
	R486	VS30000721	RES SMD 1/10W 4.7K J
	R488	VS30000471	RES CF 1/4W 10K J
	R498	VS30000563	RES SMD 1/10W 1.8K J (0805)
	R500	VS30000469	RES SMD 1/10W 1K J 0805
	R501	VS30000614	RES SMD 1/10W 2.4K J (0805)
	R502	VS30000469	RES SMD 1/10W 1K J 0805
	R503	VS30000469	RES SMD 1/10W 1K J 0805
	R504	VS30000534	RES SMD 1/10W 15K J (0805)
	R505	VS30000475	RES SMD 1/10W 10K J 0805
	R506	VS30000696	RES SMD 1/10W 39K J (0805)
	R507	VS30000469	RES SMD 1/10W 1K J 0805
	R508	VS30000466	RES CF 1/4W 1K J
	R509	VS30000593	RES SMD 1/10W 2.2K J (0805)
	R510	VS30000675	RES SMD 1/10W 3.3M J
	R511	VS30000668	RES SMD 1/10W 33K J 0805

	CRN	Part No.	Description
	R512	VS30000727	RES SMD 1/10W 47K J (0805)
	R513	VS30000727	RES SMD 1/10W 47K J (0805)
	R514	VS30000727	RES SMD 1/10W 47K J (0805)
	R515	VS30000727	RES SMD 1/10W 47K J (0805)
	R516	VS30000464	RES SMD 1/10W 100R J
	R517	VS30000464	RES SMD 1/10W 100R J
	R523	VS30000475	RES SMD 1/10W 10K J 0805
	R524	VS30000475	RES SMD 1/10W 10K J 0805
	R525	VS30000475	RES SMD 1/10W 10K J 0805
	R526	VS30000475	RES SMD 1/10W 10K J 0805
	R527	VS30000721	RES SMD 1/10W 4.7K J
	R528	VS30000560	RES CF 1/4W 1.8K J
	R529	VS30000560	RES CF 1/4W 1.8K J
	R530	VS30000560	RES CF 1/4W 1.8K J
	R531	VS30000718	RES CF 1/4W 4.7K J
	R532	VS30000475	RES SMD 1/10W 10K J 0805
	R533	VS30000721	RES SMD 1/10W 4.7K J
	R534	VS30000475	RES SMD 1/10W 10K J 0805
	R535	VS30000721	RES SMD 1/10W 4.7K J
	R536	VS30000475	RES SMD 1/10W 10K J 0805
	R537	VS30000593	RES SMD 1/10W 2.2K J (0805)
	R538	VS30000475	RES SMD 1/10W 10K J 0805
	R539	VS30000475	RES SMD 1/10W 10K J 0805
	R540	VS30000818	RES SMD 1/10W 8.2K J (0805)
	R541	VS30000721	RES SMD 1/10W 4.7K J
	R542	VS30000721	RES SMD 1/10W 4.7K J
	R543	VS30000717	RES SMD 1/10W 470R J (0805)
	R544	VS30000471	RES CF 1/4W 10K J
	R545	VS30000469	RES SMD 1/10W 1K J 0805
	R546	VS30000475	RES SMD 1/10W 10K J 0805
	R547	VS30000475	RES SMD 1/10W 10K J 0805
	R548	VS30000721	RES SMD 1/10W 4.7K J
	R549	VS30000531	RES CF 1/4W 15K J
	R550	VS30000721	RES SMD 1/10W 4.7K J
	R551	VS30000475	RES SMD 1/10W 10K J 0805
	R552	VS30000475	RES SMD 1/10W 10K J 0805
	R553	VS30000471	RES CF 1/4W 10K J
	R554	VS30000815	RES CF 1/4W 8.2K J
	R556	VS30000567	RES SMD 1/10W 18K J 0805
	R558	VS30000475	RES SMD 1/10W 10K J 0805
	R559	VS30000588	RES SMD 1/10W 220R J 0805
	R561	VS30000692	RES SMD 1/10W 3.9K J 0805
	R562	VS30000471	RES CF 1/4W 10K J
	R563	VS30000471	RES CF 1/4W 10K J
	R564	VS30000475	RES SMD 1/10W 10K J 0805
	R565	VS30000475	RES SMD 1/10W 10K J 0805
	R566	VS30010167	RES SMD 1/10W 56R J 0805
	R568	VS30000475	RES SMD 1/10W 10K J 0805
	R569	VS30000459	RES CF 1/4W 100R J
	R571	VS30000466	RES CF 1/4W 1K J
	R572	VS30000475	RES SMD 1/10W 10K J 0805
	R573	VS30000721	RES SMD 1/10W 4.7K J
	R574	VS30000692	RES SMD 1/10W 3.9K J 0805
	R576	VS30000475	RES SMD 1/10W 10K J 0805
	R578	VS30000475	RES SMD 1/10W 10K J 0805
	R579	VS30000721	RES SMD 1/10W 4.7K J
	R580	VS30000464	RES SMD 1/10W 100R J
	R581	VS30000588	RES SMD 1/10W 220R J 0805
	R582	VS30000464	RES SMD 1/10W 100R J
	R583	VS30000475	RES SMD 1/10W 10K J 0805
	R584	VS30000563	RES SMD 1/10W 1.8K J (0805)

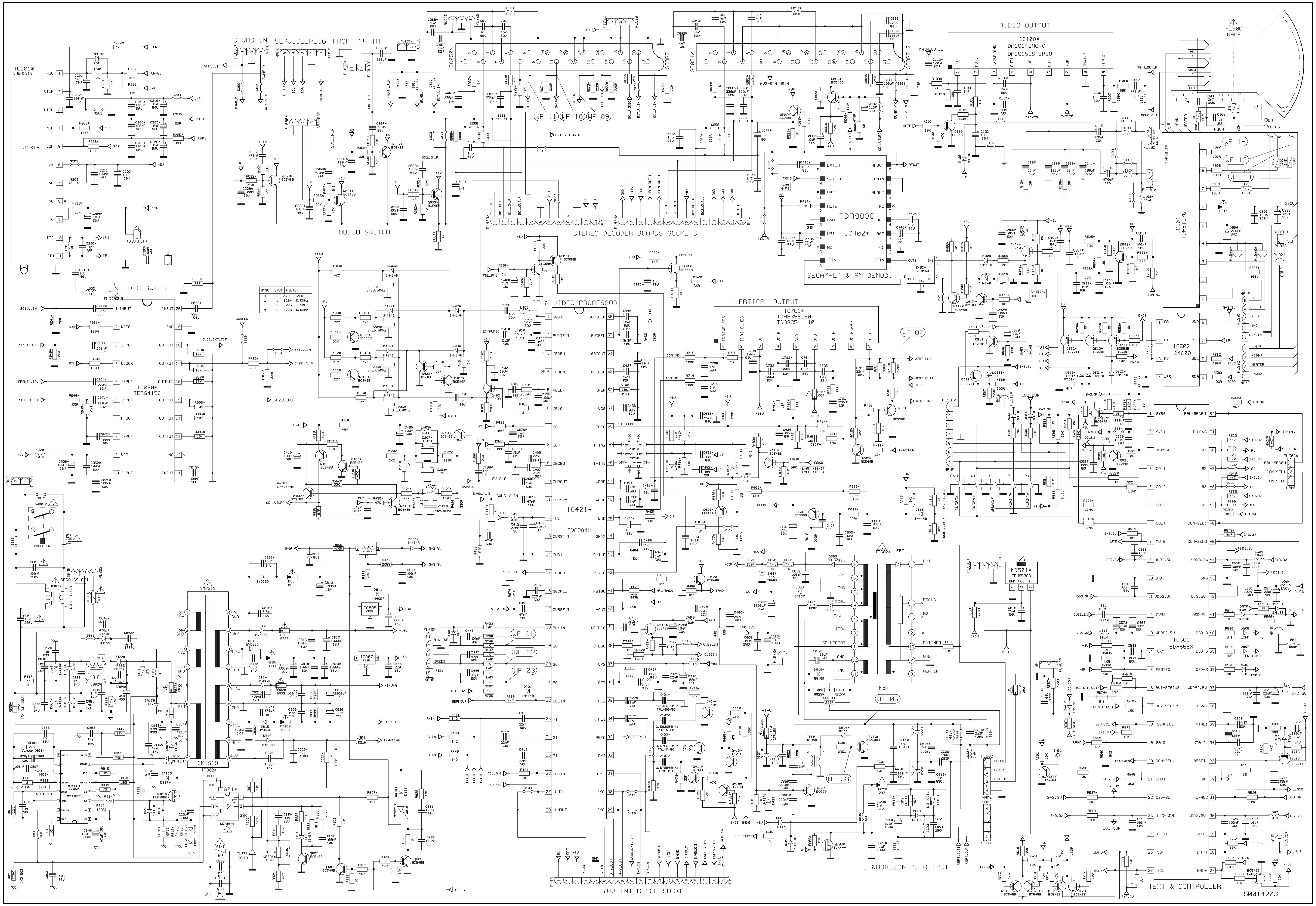
	CRN	Part No.	Description
	R585	VS30000480	RES SMD 1/10W 100K J (0805)
	R586	VS30000480	RES SMD 1/10W 100K J (0805)
	R587	VS30000712	RES CF 1/4W 470R J
	R589	VS30000529	RES SMD 1/10W 1.5K J
	R590	VS30000721	RES SMD 1/10W 4.7K J
	R592	VS30000475	RES SMD 1/10W 10K J 0805
	R594	VS30000475	RES SMD 1/10W 10K J 0805
	R595	VS30000475	RES SMD 1/10W 10K J 0805
	R596	VS30000475	RES SMD 1/10W 10K J 0805
	R598	VS30000475	RES SMD 1/10W 10K J 0805
	R601	VS30000471	RES CF 1/4W 10K J
	R602	VS30000459	RES CF 1/4W 100R J
	R605	VS30000466	RES CF 1/4W 1K J
	R610	VS30001125	RES MO 2W 2.2K J
	R611	VS30001215	RES FUSE 1W 1R J
	R613	VS30000837	RES CF 1/4W 9.1K J
	R614	VS30000815	RES CF 1/4W 8.2K J
	R615	VS30000837	RES CF 1/4W 9.1K J
	R617	VS30000599	RES CF 1/4W 220K J
	R618	VS30000588	RES SMD 1/10W 220R J 0805
	R619	VS30000815	RES CF 1/4W 8.2K J
	R620	VS30001082	RES MO 1/2W 1K J
	R626	VS30000466	RES CF 1/4W 1K J
⚠	R628	VS30001230	RES FUSE 1/2W 27R J
	R630	VS30001082	RES MO 1/2W 1K J
	R700	VS30000466	RES CF 1/4W 1K J
	R702	VS30000551	RES CF 1/4W 18R J
	R703	VS30000911	RES MF 1/4W 1.8R J
⚠	R704	VS30001251	RES FUSE 1/2W 56R J
	R705	VS30000580	RES CF 1/4W 22R J
	R706	VS30000949	RES MF 1/4W 3K G
	R707	VS30000655	RES CF 1/4W 330R J
	R708	VS30000469	RES SMD 1/10W 1K J 0805
	R709	VS30000475	RES SMD 1/10W 10K J 0805
	R710	VS30000718	RES CF 1/4W 4.7K J
	R711	VS30000500	RES CF 1/4W 12K J
	R716	VS30000466	RES CF 1/4W 1K J
	R717	VS30000712	RES CF 1/4W 470R J
	R805	VS30000633	RES CF 1/4W 27K J
	R806	VS30001129	RES MO 3W 22K J
	R807	VS30000466	RES CF 1/4W 1K J
	R808	VS30007029	RES SMD 1/10W 9.1K J (0805)
	R809	VS30000469	RES SMD 1/10W 1K J 0805
	R810	VS30000597	RES SMD 1/10W 22K J
	R811	VS30000597	RES SMD 1/10W 22K J
	R812	VS30000519	RES CF 1/4W 150R J
	R813	VS30000475	RES SMD 1/10W 10K J 0805
	R814	VS30000706	RES CF 1/4W 47R J
	R816	VS30000540	RES CF 1/2W 1.5M J (400V)
	R817	VS30001260	RES WW 5W 2.2R J RAD.
	R818	VS30000466	RES CF 1/4W 1K J
	R821	VS30000602	RES SMD 1/10W 220K J 0805
	R822	VS30001129	RES MO 3W 22K J
	R823	VS30001037	RES MF 1/4W 99K F
	R824	VS30000925	RES MF 1/4W 2.2K F
	R828	VS30007759	RES CF 1W 47K J
	R829	VS30000469	RES SMD 1/10W 1K J 0805
	R831	VS30000471	RES CF 1/4W 10K J
	R832	VS30000721	RES SMD 1/10W 4.7K J
	R833	VS30000710	RES SMD 1/10W 47R J (0805)
	R834	VS30000818	RES SMD 1/10W 8.2K J (0805)

	CRN	Part No.	Description
	R835	VS30000580	RES CF 1/4W 22R J
	R836	VS30000706	RES CF 1/4W 47R J
	R844	VS30000471	RES CF 1/4W 10K J
⚠	R845	VS30001257	RES MG 1/2W 4.7M J
	R849	VS30000534	RES SMD 1/10W 15K J (0805)
	R850	VS30000569	RES CF 1/4W 180K J
	R858	VS30000712	RES CF 1/4W 470R J
	R860	VS30000603	RES CF 1/2W 2.2M J (400V)
	R868	VS30000810	RES CF 1/4W 820R J
	R869	VS30000810	RES CF 1/4W 820R J
	R870	VS30001159	RES MO 1W 0.33R J
	R871	VS30000471	RES CF 1/4W 10K J
	R872	VS30007786	RES SMD 1/10W 2.55K F (0805)
	R873	VS30012852	RES SMD 1/10W 3.9K F (0805)
	R879	VS30000718	RES CF 1/4W 4.7K J
	R885	VS30000475	RES SMD 1/10W 10K J 0805
	R886	VS30000475	RES SMD 1/10W 10K J 0805
	R888	VS30000503	RES SMD 1/10W 12K J (0805)
	R890	VS30001089	RES MO 2W 1R J
	R901	VS30000525	RES CF 1/2W 1.5K J
	R902	VS30000525	RES CF 1/2W 1.5K J
	R903	VS30000525	RES CF 1/2W 1.5K J
	R905	VS30000525	RES CF 1/2W 1.5K J
	R906	VS30000525	RES CF 1/2W 1.5K J
	R907	VS30000459	RES CF 1/4W 100R J
	R908	VS30000459	RES CF 1/4W 100R J
	R909	VS30000459	RES CF 1/4W 100R J
⚠	R914	VS30001242	RES FUSE 1/4W 47R J
	SC050	VS30001865	SOCKET SCART (R)
	SP901	VS30000428	SPARK GAP 300V
	SP902	VS30000428	SPARK GAP 300V
	SP903	VS30000428	SPARK GAP 300V
	SP904	VS30000428	SPARK GAP 300V
	SW501	VS30002178	SWITCH TACT SKHHLU
	SW502	VS30002178	SWITCH TACT SKHHLU
	SW503	VS30002178	SWITCH TACT SKHHLU
	SW504	VS30002178	SWITCH TACT SKHHLU
⚠	SW801	VS30002175	SWITCH ON/OFF 2.5A/100A
⚠	TH801	VS30001270	PTC 9 OHM
	TR601	VS30002090	LINE DRIVER NEW TYPE
⚠	TR602	VS30002826	TRF FBT 90ø (LAYER TYPE)
⚠	TR801	VS30002100	LINE FILTER 2*27MH
⚠	TR802	VS30002083	TRF SMPS 90° (170-270V)
	TU201	VS30001930	TUNER WSP (VST)
	X401	VS30001748	XTAL 4.433619 MHZ
	X501	VS30006662	XTAL 6MHZ
	Z206	VS30001720	FILTER SER 6MHZ SFE 6MB
	Z209	VS30001725	FILTER CER TRAP TPS6.0MHZ
	Z401	VS30001678	FILTER SAW J1956

NOTE: Some components do not appear in all models. Refer to Parts List

Model Variant Assembly Parts

C2125S/CL2125S/CP2125S	
BACK CVR.XX6-7-8-9/6-25/26 SILVER (P)	VS20053756
BUTTON ASSY.XX66/86 (SILVER/P)	VS20056985
BUTTON FUNCTION XX66/86 SILVER (P)	VS20056986
BUTTON ON/OFF XX66/86 (SILVER) (P)	VS20056988
FRONT 5586-AV W/H&J SILVER (P)	VS20092618
C2142S/CL2142S/CP2142S	
BACK CVR.5X70/71-2172 SILVER (P)	VS20039118
BUTTON ASSY 2172H (4T) (SILVER/P)	VS20093733
BUTTON FUNCTION 2172H (SILVER/P)	VS20093730
BUTTON ON/OFF 2172H (SILVER/P)	VS20093732
FRONT 2172H-FAV W/H&J SILVER (P)	VS20093735
C2842S/CL2842S/CP2842S	
BACK C.(2.&3.K)7210/1/2/5/6-2872(19)SILV	VS20095591
BUTTON ASSY.2872H (SILVER/P)	VS20092538
BUTTON FUNCTION 2872H SILVER (P)	VS20092541
BUTTON ON/OFF 2872H SILVER (P)	VS20092539
CONT.PNL DOOR 2872H SILVER (P)	VS20092537
FRONT 2872H W/H SILVER (P)	VS20092534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UV1315
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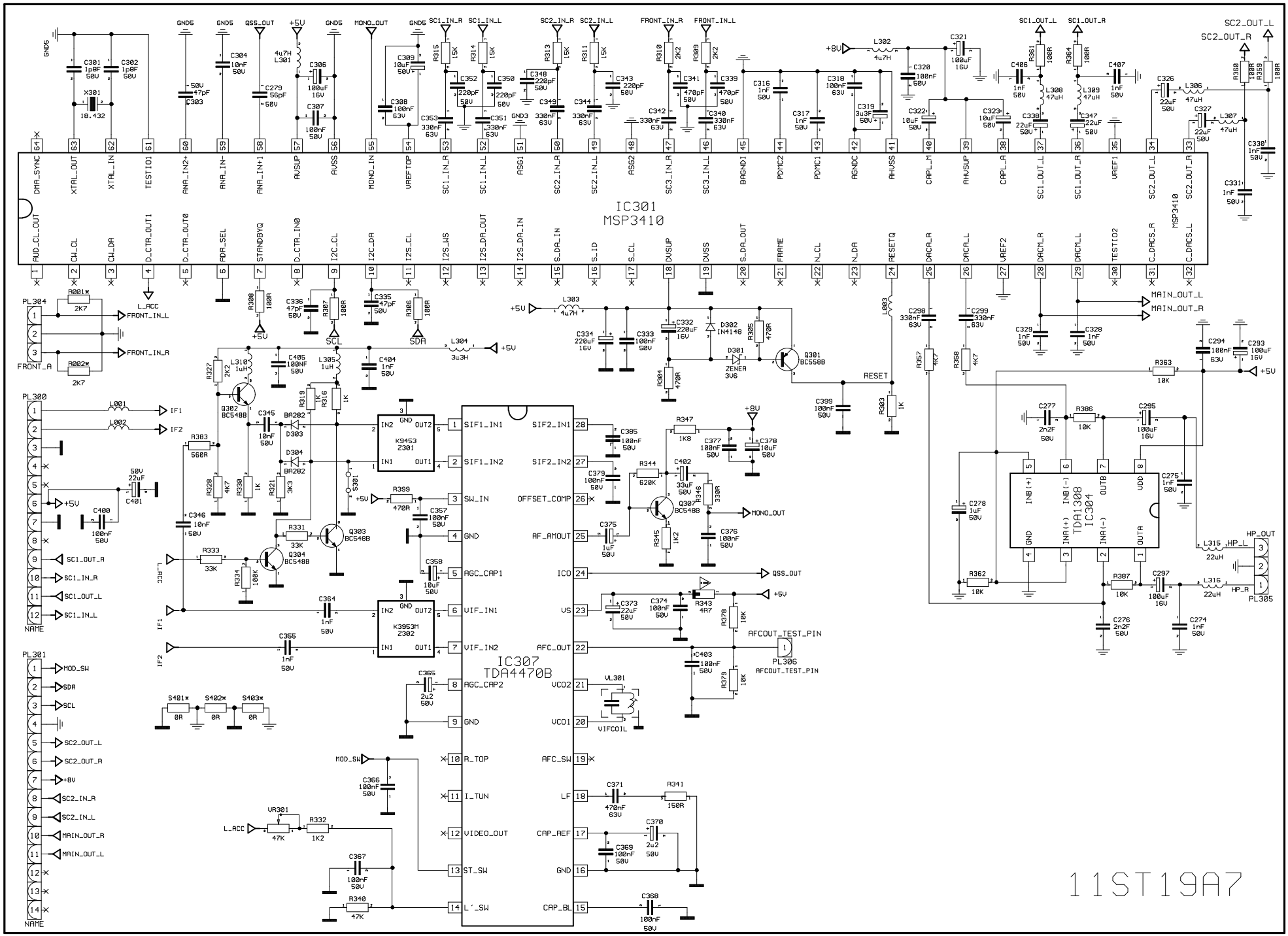
SERVICE_PLUG
FRONT AV IN
SC050*
SCART-1
SC051*
SCART-2
AUDIO OUTPUT
IC100*
TDA2614_MONO
TDA2615_STEREO
PL900
AUDIO SWITCH
STEREO DECODER BOARDS SOCKETS
TDA9830
IC402*
SECAM-L´ & AM DEMOD.
VIDEO SWITCH
IC050*
TEA6415C
IF & VIDEO PROCESSOR
IC401*
TDA884X
VERTICAL OUTPUT
IC701*
TDA8356_90
TDA8351_110
IC901
TDA6107Q
IC502
24C08
DEGAUSS COIL
LINE-FILTER
POWER-SW
SMPS19
TR802*
IC802*
MC44604
IC801*
CQY80NG
IC804
LM317
IC805
7808
IC807
7805
FBT
TR602*
MD501*
TFMS5360
YUV INTERFACE SOCKET
EW&HORIZONTAL OUTPUT
IC501
SDA555X
TEXT & CONTROLLER
50014273


IC301
MSP3410
IC307
TDA4470B
IC304
TDA1308
K9453
Z301
K3953M
Z302
11ST19A7

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